

SPECIAL
HEALTH
DOUBLE
ISSUE

TIME

THIS
BABY
COULD
LIVE
TO BE
142
YEARS
OLD

Dispatches From the
Frontiers of Longevity



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**CHANGING THE DNA
OF CANCER CARE**



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*Photograph by Evan
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Hillary buttons for sale in Davenport, Iowa, in anticipation of her 2016 presidential run. Photograph by Daniel Acker—The New York Times/Redux

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HOW OLD CAN WE LIVE TO BE?

That remains to be seen, but if a promising drug does to humans what it does to mice—a big if—the answer is **142**. Mice have a median survival time of **27 MONTHS**, but with treatment, the longest-living mouse hit **48 MONTHS**, a life **1.77 TIMES LONGER**. The median human lifespan is **80 YEARS**—so if the oldest person lived **1.77** times longer, he or she would reach **142**.

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Editor's Desk

The Honored Image

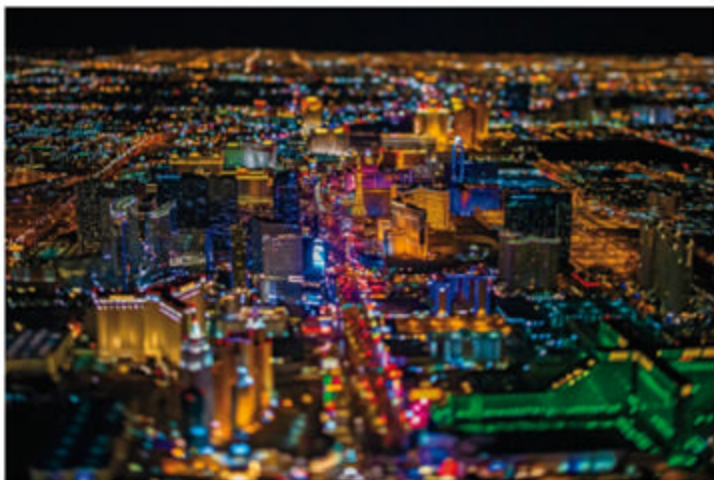


IN THIS SPACE I OFTEN HIGHLIGHT OUR best photojournalism, and so it was with particular pride that we gathered on Feb. 2 to watch James Nachtwey, a TIME contract photographer for 30 years, accept the industry's highest individual honor at the National Magazine Awards. In her tribute to Jim, TIME's director of photography, Kira Pollack, surveyed his great body of work, covering events in places from Sudan to Rwanda to Gaza, and observed that "Jim's pictures do more than raise awareness. They bring about change. A senior member of the International Committee of the Red Cross told him once that his shocking pictures of famine in Somalia published in the *New York Times Magazine* in 1992 mobilized the largest relief effort since World War II and saved 1.5 million lives."

To the assembled editors and publishers, Jim gave his testimony: "We navigate dangers, endure hardships and get our hearts broken by what we witness, over and over again, because we believe that people's opinions matter, that our society cannot function properly without the information we provide and without the stories we tell," he said. "Our work is aimed at our readers' best instincts—generosity, compassion, a sense of right and wrong, a sense of identification with others on a human level, across cultures, beyond the borders of nationality, and perhaps most importantly, the refusal to accept the unacceptable."

In this tradition, TIME won the feature photography award that night for Jerome Sessini's pictures published last summer of the wreckage of Malaysia Airlines Flight 17, shot down over eastern Ukraine. Jerome was among the first journalists on the scene, and his images captured the awful, intimate cost of a conflict that has redrawn the map of Europe. In this double issue, he takes us back to Ukraine, to travel underground with the miners who are caught up in the fight that is tearing their country into pieces.

Nancy Gibbs, EDITOR



LIGHTBOX "The scary part was to open the door and slide out of the helicopter at 9,000 feet," recalls photographer and filmmaker Vincent Laforet on taking a stunning series of Las Vegas aerial shots (including the one above). He's pulled off similar feats before—shooting Manhattan from the air in November—but this was the first time Laforet says he experienced hypoxia, or shortness of breath, because of a lack of oxygen. Not that he minded once he saw the photos. "It's a complete spot of energy that is so artificial," he says. "It's just so Vegas." For more from Laforet's series, visit lightbox.time.com.



TIME FOR FAMILY



About 40% of adoptive parents are raising kids of a different race. Their challenges are the subject of a feature on our new TIME for Family site, where parents can find a range of deeply reported, news-driven stories, on topics from managing kids' screen time to ADHD. You can subscribe, and sign up for our free weekly newsletter—a guide to the best of family content from other media—at time.com/parents.

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Conversation

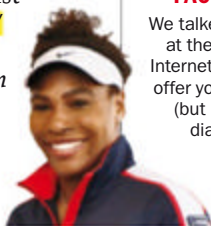
What You Said About ...



STARBUCKS FOR AMERICA Rana Foroohar's Feb. 16 profile of Starbucks CEO and social activist Howard Schultz—in which she explores his possible political ambitions—struck a chord with readers and the business media. Aurora King of La Jolla, Calif., was

thrilled that mogul David Geffen had encouraged Schultz to run for President. **"Leadership is so sadly lacking in the world. Schultz more than fills the bill,"** she wrote. CNBC's Andrew Ross Sorkin called the Geffen nugget "one of the most interesting revelations in the piece." "Kudos to Schultz for training disadvantaged workers, hiring veterans ... and providing generous health insurance benefits," wrote Maryannette Bednar, calling him a "farsighted CEO." In a video report, Yahoo Finance's Aaron Task riffed on Schultz's observation, garnered from reading consumer data early each morning, that working Americans have a "fractured level of trust and confidence." "We could have told you that without getting up at 4:30 a.m.," joked Task, before calling Schultz "a visionary founder" with the ability to "drive the conversation within his party."

SERENA WILLIAMS The tennis star's essay on her decision to play at the Indian Wells, Calif., tournament, which she had boycotted for 14 years over racist booing, was shared thousands of times on Twitter and Facebook. Though a few readers questioned whether the booing (which came after sister Venus dropped out late in the 2001 tournament) was racially motivated, most reactions were like this tweet from journalist Judd Legum: **"Serena Williams = The Best/My Hero."** Georgetown professor Michael Eric Dyson added in comments to the *Nation* that her decision, after years of battle in a largely white and sometimes hostile sport, "suggests the majestic arc of forgiveness in black life that has helped to redeem America."



NOW ON TIME.COM

Put yourself to the test with quizzes covering everything from pop culture to real estate to science. Here, a preview of what's available at time.com/quizzes:

1

CAN YOU GUESS WHICH CELEBRITY IS WORTH MORE?

We pitted Beyoncé's 2014 earnings against those of Jay Z, among others.

2

ARE YOU SMARTER THAN A FIFTH-GRADER?

Featuring actual questions from fifth-grade science classrooms.

3

ARE YOU ADDICTED TO FACEBOOK?

We talked to experts at the Center for Internet Addiction to offer you an instant (but unofficial) diagnosis.

UPDATE In last year's *TIME* 100 issue, we profiled Erwiana Sulistyarningsih, who became an icon after speaking out about her harrowing experience as an Indonesian migrant domestic worker. (She alleged that her Hong Kong employer tortured, starved and enslaved her.) On Feb. 10, after a six-week trial that sparked migrant-worker protests throughout Hong Kong, the employer, Law Wan-tung, a 44-year-old mother of two, was convicted on 18 charges, including grievous bodily harm, failure to pay wages and criminal intimidation. At the court, Sulistyarningsih's supporters waved blown-up versions of the drawing of her for *TIME* by Michael Hoeweler (above). And she told reporters she plans to keep fighting so that those in power "start treating migrant workers as workers and human beings and stop treating us like slaves."



SCHOOLS OPTING OUT Many teachers praised Haley Sweetland Edwards' coverage of the backlash against standardized testing in schools. One of them, Ayla Tektas of Madison, N.J., suggested to test-promoting politicians, **"Let's tie your salaries and numbers of years you get to spend on the job to the numbers of kids who don't go to bed hungry."** Carlos Rangel of Fletcher, N.C., though, was concerned that "the article does not mention the poor results U.S. students are getting when they compete with students from other countries."

OBAMA'S "EVOLUTION" ON GAY MARRIAGE **"The President is no fool, and understood the game of politics,"** wrote Ricardo Rivera in response to an article on *TIME.com* by Zeke J. Miller reporting an excerpt from David Axelrod's new book; it describes the President as privately backing marriage equality in 2008 despite publicly saying he supported only civil unions. (Axelrod says he and other advisers encouraged that stance for political reasons.) On Twitter, New York *Times* political reporter Nick Confessore linked to the piece, writing, "More proof that we in the media should be tougher on politicians who say they 'evolve' on an issue like gay marriage."

SETTING THE RECORD STRAIGHT

In "The Ages of Royalty" (Feb. 9), the wrong photo appeared with a caption about Kuwait's Emir Sabah al-Ahmad al-Jaber al-Sabah.

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Briefing

'This show
doesn't deserve
an even slightly
restless host.'



JON STEWART, host of Comedy Central's *The Daily Show*, announcing that after 16 years on the anchor desk, he'll leave the show this year

11

Number of weeks Taylor Swift's 1989 topped the *Billboard* 200, making her the second woman to accomplish the feat twice



42%

Percentage of Americans who don't support private ownership of drones, according to a Reuters/Ipsos poll

'He
grudgingly
accepted
the counsel
of more
pragmatic
folks like
me.'

DAVID AXELROD, former political adviser to President Obama, saying in a new book that Obama, at the urging of Axelrod and others, misled the nation when he said he opposed gay marriage during the 2008 campaign

Netflix

The video-streaming giant said it would expand into Cuba



GOOD WEEK

BAD WEEK



Uber

Rape allegations against a driver led the company to add a panic button in India



'BECK NEEDS TO RESPECT ARTISTRY, AND HE SHOULD HAVE GIVEN HIS AWARD TO BEYONCÉ.'

KANYE WEST, rapper, declaring that Beyoncé was more deserving of the Grammy Award for Album of the Year



57

Number of blocks of cheese that a Tennessee couple was accused of stealing from a Walmart

'I would be very uncomfortable if I saw it.'

MELANIE GRIFFITH, mother of Dakota Johnson, on why she won't see the film adaptation of the erotic novel *Fifty Shades of Grey*, which stars her daughter as the female lead



'There is no temporary solution—this conflict must be resolved, not frozen.'

PETRO POROSHENKO, Ukrainian President, calling for an immediate cease-fire in his country's eastern region, where pro-Russia separatists are battling Ukrainian military forces. World leaders gathered in Belarus on Feb. 11 to address the crisis

Briefing

LightBox

Finishing Touches

A worker cleans an enormous float on Feb. 10 in preparation for the 2015 Rio de Janeiro Carnival. The annual festival, first held in 1723, takes place before the start of Lent and attracts more than 2 million attendees.

Photograph by Pilar Olivares—Reuters

FOR PICTURES OF THE WEEK,
GO TO lightbox.time.com





World

Europe's Anti-Austerity Contagion

By Ian Bremmer

At the height of the euro-zone crisis in 2011–12, governments in Greece, Spain and other cash-strapped countries were given enormous bailouts in exchange for pledges to enact reforms and accept painful austerity. A few years later, progress has been made, but voters in those countries are growing tired of economic misery. In January a radical left-wing party won elections in Greece by promising an end to the pain: Syriza says it will write off most of Greece's \$363 billion worth of debt and defy further demands for austerity.

Some in Europe have begun to fear that Syriza's defiance will embolden similar movements in other countries, fatally undermining all that has been accomplished. Podemos, a left-wing anti-austerity party in Spain, has already posted huge gains in opinion polls. A Podemos government could join Syriza-led Greece in refusing calls for more sacrifice. Voters in Italy and France might then join the protest. That would spell an end to the euro—and perhaps to the E.U.

This isn't likely to happen. The so-called troika—the European Central Bank (ECB), the European Commission and the International Monetary Fund (IMF)—and Germany, the

biggest contributor to Greek bailouts, have a great deal of leverage. They have the money Athens needs to keep the lights on, and for all of Syriza's demands for concessions, everyone involved knows that absent a negotiated deal, Greece will default on its debt, and its economy will collapse. Polling suggests that Greek voters want an end to austerity, but strong majorities also want to remain within the E.U. and keep the euro. Syriza will have to cave.

Podemos is now telling voters what they want to hear, but Syriza will demonstrate that those things aren't true. Spain's unemployment remains well above 20%, but the country's economy is now growing faster than the European average. On election day this fall, few voters will want to import Greek-style tur-

moil. That's good news for the future of the euro zone.

But the over-the-top demands of Greece's new leaders suggest they might not recognize that they're fighting a war they can't win. If Syriza overplays its hand, it could generate enough scary headlines to provoke a national banking crisis ahead of critical repayments to the IMF and ECB. If the Germans and the troika are too complacent to offer Syriza a face-saving way to back down, they could join Syriza in stumbling into a debt default that would force Greece out of both the euro and the union.

Once that precedent is set, no one knows where it might lead.

Foreign-affairs columnist Bremmer is the president of Eurasia Group, a political-risk consultancy



A Madrid rally for Podemos in January shows the left-wing party's rising support



IRAN

‘Our negotiators are trying to take the weapon of sanctions away from the enemy.’

AYATULLAH ALI KHAMENEI, Iran's Supreme Leader, in a statement carried by the official IRNA news agency on Feb. 8, giving his strongest defense yet of his country's negotiations with the U.S., Russia, China, France, Germany and the U.K. over Iran's nuclear program. Khamenei, the country's highest authority, has been skeptical of the negotiations even as Western sanctions have buffeted the country's economy. Diplomats are working to agree on the outline of a deal before a late-March deadline.

DATA

WORLD CINEMA

Five countries had movies nominated for the foreign-language Academy Award ahead of the Feb. 22 ceremony. Here's a sample of countries that have won Oscars in that category:



Italy
14



Japan
4



USSR/Russia
4



Argentina
2



Algeria
1



Use of Force

SYRIA Parts of the Douma suburb of Damascus were left in piles of rubble on Feb. 9 after what activists said were attacks by forces loyal to President Bashar Assad. President Barack Obama asked the U.S. Congress on Feb. 11 for a new, three-year authorization of war against the extremist Islamic State of Iraq and Greater Syria (ISIS). The group has seized large parts of both countries amid the chaos. *Photograph by Mohammed Badra—Reuters*

ROUNDUP

Cuba Opens for Business

Streaming-media company Netflix announced on Feb. 9 that it would make its service available in Cuba, a largely symbolic move in a country where just 5% of people have access to the World Wide Web. But as the U.S. government prepares to reassess its embargo on the island nation, here's a look at the industries that are poised to benefit:



Tourism

Easing U.S. travel restrictions could pave the way for an estimated 2 million Americans to visit annually by 2017. U.S. cruise companies will look to add Havana to Caribbean routes.



Energy

Cuba's territory may hold up to 4.6 billion barrels of oil and massive amounts of natural gas. U.S. energy companies will be champing at the bit for the chance to tap those reserves.



Agriculture

The White House's move in January to lift sanctions on farming equipment could help boost domestic output in a country that currently depends on imports for 80% of its food.



Health Care

Cuba's premier health care system—it has the lowest infant-mortality rate in the Western hemisphere—will likely draw American “medical tourists” who are looking for affordable care.



U.K.

\$15.2 MILLION

The estimated value of a copy of the Magna Carta from the year 1300 found in a scrapbook in Kent, England; the treaty, first written eight centuries ago this year, established the principle that no one was above the law

Trending In



POLITICS

Nigeria postponed presidential elections set for February until March 28, citing fears of worsening attacks by the Islamist group Boko Haram. But incumbent Goodluck Jonathan, facing strong opposition, was accused of trying to buy extra time to make his case.



LAW

Japanese Prime Minister Shinzo Abe said he wants to begin the process of revising the country's pacifist constitution in 2016, to allow Japan to respond to threats posed by groups like ISIS, which killed two Japanese hostages in January.

DIPLOMACY

Paulina Vega, Colombia's newly crowned Miss Universe, said she was “ready and willing” to attend peace talks between her government and Marxist rebels, after the group invited her to join negotiations in Cuba aimed at ending the five-decade conflict.



Nation

Dixie Diehard An Alabama judge fights the feds on same-sex marriage

BY JOSH SANBURN

THE SAME-SEX-MARRIAGE TIDE was bound to hit a few new barriers as it rolled across the nation. And so as the U.S. Supreme Court signaled yet again that state bans would soon be swept aside, Roy Moore, the chief justice of the Alabama Supreme Court, responded with a futile attempt to hold back the sea change.

The disarray began on Jan. 23, when U.S. District Judge Callie Granade struck down Alabama's same-sex-marriage ban, joining a majority of federal judges in circuits from coast to coast. In response, the Alabama Probate Judges Association—which represents the officials who issue marriage licenses—told member judges that they must follow state law regardless of the federal-court ruling. Three days later, Judge Granade clarified her order: all statewide public officials, including probate judges, were to comply.

As the case was appealed to the U.S. Supreme Court, Moore—known for having commissioned a 5,200-lb. granite display of the Ten Commandments at the state supreme courthouse and defying a federal court order to remove it—strode onto center stage. (The tablet drama cost Moore his seat in 2003; he was re-elected in 2012.) Asserting his authority as head of the state judiciary, Moore instructed the probate judges to uphold the ban. Granade's authority applied only to the attorney general, who is part of the state's executive branch,

he argued, and not its judges.

On Feb. 9, when Granade's ruling took effect, confusion and inconsistency ensued. In some counties, same-sex couples were wed without incident; in other jurisdictions, state judges followed Moore's lead. Still others tried to split legal hairs, accepting marriage applications but refusing to give out licenses.

"In a very technical sense, Moore is correct," says Ron Krotoszynski, a law professor at the University of Alabama. "However, from a wider angle, he's quite wrong to suggest that this order does not represent a binding ruling on the constitutional status of Alabama's ban on same-sex marriage."

Similar federal court rulings have been implemented in more than 25 states in recent months, including such conservative bastions as Wyoming, Indiana and Utah. Only the Midwestern 6th Circuit Court of Appeals has upheld state bans—and that ruling will be scrutinized by the U.S. Supreme Court later this year. Generally, state judges have deferred to federal judges to avoid these kinds of conflicts, says Carl Tobias, a University of Richmond law professor.

Alabama, however, is different. The state has a history of standing up to federal authority that dates back to the Civil War. In June 1963, Governor George Wallace blocked an entrance to the University of Alabama and dared the federal government to integrate the school by force. But the latest



Southern pride Demonstrators outside the Jefferson County courthouse on Feb. 9

clanging of the states'-rights bell is a faint echo of past showdowns. This time, there was no federalizing of the Alabama National Guard, or a phone call to the President.

"The governor is not standing at the door the way Governor Wallace did on desegregation," says Yale law professor William Eskridge. "The attorney general isn't saying, Let's defy this federal injunction. This is really just one official, and he hasn't attracted a lot of support."

What Moore's defiance shared with past episodes was the odor of futility. While only 32% of Alabamians favor same-sex marriage (tied for last in the U.S. with Mississippi), the trend

WHAT MOORE'S
DEFIANCE
SHARED WITH
PAST EPISODES
WAS THE ODOR
OF FUTILITY



nationwide is in favor of marriage rights, and the Supreme Court appears ready to declare that same-sex marriage cannot be a right in some states but not in others.

No less an authority than Justice Clarence Thomas sees the handwriting on the wall. Dissenting from the court's decision not to second-guess *Granade's* ruling, Thomas gave the strongest hint yet that his colleagues are prepared to take the final step. On the matter of how the court will rule on same-sex marriage later this year, the conservative justice wrote: "This acquiescence may well be seen as a signal of the court's intended resolution on that question."

ALABAMA: TAMIKA MOORE—AL.COM/LANDOV; BUSH: GETTY IMAGES

EDUCATION

Schoolhouse Rocked

For years, top college graduates clamored to be accepted by Teach for America (TFA), the education juggernaut that sends thousands of new teachers to the nation's neediest schools for two-year stints in the classroom. But after 15 years of steady growth, TFA may be losing some of its allure: applications to the program are down 10% compared with last year, and the 2014 total was 12% below that of 2013.

The falloff has much to do with the improving economy. During the financial crisis and recession, jobs were scarce for graduates of even the most elite universities. The selective TFA program offered a prestigious way to try out teaching without footing the bill for graduate school. Now that hiring has rebounded, TFA faces more, and often far-better-paying, competition for those top graduates.

But TFA, which since its founding in 1989 has been closely aligned with both the charter-school movement and the testing- and standards-based model of education reform, is also buffeted by the charged debate over

public education. To TFA's critics, the application drop is evidence that more aspiring teachers oppose its approach to reform. They argue that the way to fix ailing schools is not by packing classrooms with inexperienced new teachers but by providing higher salaries and better training programs for career educators.

Wendy Kopp, the founder and CEO of TFA, acknowledges that the "political vitriol" surrounding education reform is an issue. "There's just so much more public controversy than we've historically contended with," she tells *TIME*. A February report by Bellwether Education Partners, a nonprofit that often works with reformers, found that public criticism of TFA has affected recruiting.

But Kopp points to the increasing competition for talent, especially among technology firms, as a more significant culprit. In the past, TFA could appeal to young people's sense of idealism. These days, she says, deep-pocketed companies like Google are all about "making a difference" and "changing the world" too."

NEW YORK COP PLEADS NOT GUILTY IN FATAL SHOOTING

Nearly two months after a grand jury decided not to indict a New York City police officer in the death of Eric Garner, another city cop was charged in the death of an unarmed black man. The officer, Peter Liang, pleaded not guilty on Feb. 11 to charges including second-degree manslaughter in the fatal shooting of Akai Gurley. Liang had been on the force for less than 18 months when he fired a single shot that killed Gurley inside the dark stairwell of a Brooklyn housing project. NYPD Commissioner William Bratton called Gurley "a total innocent" and described the shooting as an "unfortunate accident."

POLITICS

High-Tech Trouble

Ethan Czahor was a hiring coup for Jeb Bush's all-but-certain presidential campaign. The co-founder of Hipster.com offered coding chops and Silicon Valley cred rare among Republican operatives.

But late on Feb. 10, barely 30 hours after *TIME* had reported Czahor's appointment as CTO of Bush's Right to Rise PAC, the tech guru was forced to resign. The surprise divorce came after reporters—with the help of Democratic hands—uncovered old tweets and blog posts from Czahor that were offensive to women and minorities, the very constituencies Bush needs to attract in order to broaden the Republican Party.

The abrupt turnaround on Czahor highlights the GOP's long-standing trouble recruiting the talent needed to close the tech gap with Democrats. Bush's team was so eager to get him on board, it neglected to properly vet its star hire.

Part of the problem is cultural. Despite its libertarian economic instincts, Silicon Valley tends to share the social agenda of the Democratic Party. In 2012, President Barack Obama capitalized on that by drawing top engineers from leading tech outfits to build the most sophisticated political-data operation in history. After the GOP's defeat, the Republican

National Committee tried to play catch-up, trumpeting the hiring of former Facebook engineer Andy Barkett as its CTO. Alas, Barkett had trouble navigating the ways of Washington, and he was marginalized before the 2014 election and replaced in January 2015. —ZEKE J. MILLER



Bush had to abandon his new CTO

**PILEUP**

Lee Anderson adds to a snowbank in Somerville, Mass., near Boston, on Feb. 10

The Big Dig

Boston gets buried by storms

BY SARAH BEGLEY AND SAM FRIZELL

EVEN IN BOSTON, A CITY THAT knows its way around a snow shovel, this is getting to be a bit much. The Hub was hit with 73.3 in. of snow from Jan. 12 to Feb. 10, a 30-day record that led to school closures, a shutdown of the mass-transit system and hundreds of millions of dollars in economic losses for the state.

With more snow expected, the city is running out of places to put the stuff. The state gave Boston permission to dump excess snow into the ocean—something normally forbidden, as it adds pollutants like road salt and motor oil to the water—if the need arises. (The practice was common until the early 1990s.) “We have

\$265 MILLION

Massachusetts’ economic loss every time state roads are shut because of weather, according to research firm IHS

430 TONS

Amount of snow melted every hour at Boston’s two municipal snow farms, vacant plots where the city dumps the excess buildup

\$30 MILLION

What Boston has spent cleaning up snowy roads since Jan. 25

237,863

Miles plowed this winter by Boston snow-removal crews, as of Feb. 11



neighbors fighting over which snowbank to shovel into,” says resident Joe Caprio.

Relief is unlikely to come soon. Weather models forecast winter-storm conditions for several more weeks, says Jon Gottschalck of the National Oceanographic and Atmospheric Administration’s Climate Prediction Center. So Boston could get the 30 more in. it needs to top its all-time seasonal record. That’s good news for snow plowers, who have already shoveled enough snow to fill the Patriots’ Gillette Stadium 90 times. After a dry spell in December, says Frank Ippolito, a plow-company owner, “Mother Nature paid us back real fast.”



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Spotlight

Can the Drones Be Stopped?

As the U.S.'s edge in unmanned aircraft fades, a scramble for defenses

BY MARK THOMPSON

WASHINGTON'S GLOBAL DRONE monopoly has secretly and not so secretly killed perhaps 5,000 people overseas in the past dozen years. But it took a drunken hobbyist's 42-oz. (1.2 kg) drone crash-landing at the White House on Jan. 26 to make it clear to most Americans that unmanned aerial warfare is about to become a two-way street. That \$500 drone is the shape of things to come both at home and from enemies overseas. The question is whether the U.S. can find the legal and technical means to mount a credible defense.

Only recently have computers and GPS satellites made cheap and precise drones possible. But a certified drone boom is now under way: in the coming decade, the rest of the world is expected to spend nearly 10 times as much as the U.S. does to develop and produce drones ranging in size from passenger pigeons to passenger jets. More than 50 nations are building close to a thousand models. "These things are a real danger right now," says retired Air Force general John Jumper, who first armed the Predator seven months before 9/11. "If al-Qaeda or ISIS could get something into the U.S.

and fly it to do mischief, they'd do it this afternoon."

Drones already play a role in everything from agriculture to weather forecasting (and soon, if Amazon and Domino's Pizza have their way, home delivery). But for every positive use, there's a malevolent one, ranging from nosy neighbors to drug smugglers to terrorists.

The rules of the sky remain cloudy: the U.S. is still drafting regulations to merge unmanned aircraft safely into the nation's skyways.

"We don't really have any kind of regulatory structure at all for it," President Obama told CNN after the Chinese-made DJI Phantom landed in his backyard. (The President and First Lady were in India at the time, although their two daughters were at home.) He has ordered the FAA and other U.S. agencies to draft rules to "make sure that these things aren't dangerous and that they're not violating people's privacy." But such flight rules would apply only to those willing to follow them.

When it comes to drones, the U.S. could reap what it has sown. Washington always justified its use of

SMALL DRONES
OUTFITTERD
WITH GOPRO
CAMERAS CAN
EASILY BECOME
PEEPING
DRONES
HARASSING
NEIGHBORS

Defending Against Drones

The U.S. is unprepared to deal with the proliferation of unmanned aircraft now filling the skies



REGULATION

There are many drone no-fly zones around the world, and most operators respect them—but not always. After a drone strayed into White House airspace recently, its maker modified its flight software to ground its products in and around Washington. Experts concede that a determined intruder can get around such precautions.



DETECTION

To stop a drone, you have to know it's there. A growing number of companies are installing acoustic sensors that listen for the sound of a drone. They are found at sensitive government locations and the estates of celebrities who are leery of airborne paparazzi, but the sensors are confused by other contraptions, like Weedwackers. And they can't do anything to stop intrusions.



JAMMING

A drone on a nefarious mission needs to be guided, either by GPS signals or radioed commands from its operator. Electronic jamming can sever those links and doom the mission or even give authorities control of the drone. But such jamming is usually illegal because it interferes with communications ranging from cell phones to airliners.



DESTRUCTION

Drones tend to be slow-flying and unarmed, which makes them relatively easy to shoot down. But experts fear that future unmanned aircraft could be armed and nimble, like the military's fast, low-flying cruise missiles, making them much harder to detect and destroy.

lethal drones after 9/11 as a self-defense tactic against terrorists who wanted to attack America. Better to hunt down the bad guys in their backyard, the logic went, than to wait for them to strike the U.S. again. By that logic, terrorists seeking further revenge will almost surely send the drones humming our way for the same reason. "U.S. legal justification for its use of drones relies on a 'global war' concept that treats the entire world as a battlefield," an Army military-intelligence officer wrote in 2013. The policy, he concluded, is "myopic."

That policy may be especially shortsighted given the lack of defenses against drones. Smaller drones are limited by range, payload and speed. Larger drones may be more lethal, but they're also easier to spot with radar when flying high or with eyes and ears when they are flying low to elude radar.

The threat isn't only military. Larger drones can ferry contraband, like one that crashed into a Mexican parking lot just south of San Diego on Jan. 20 with more than 6 lb. (2.7 kg) of methamphetamine aboard. They've also been discovered trying to ferry drugs into prisons.

Sensor networks are popping up around government buildings, including nuclear sites and jails, to warn guards of unscheduled deliveries. Electronic jammers that cut an operator's control of a drone are also an option, but they are currently illegal, in part because they can disrupt cell phones, GPS devices and aircraft signals needed for safe flight.

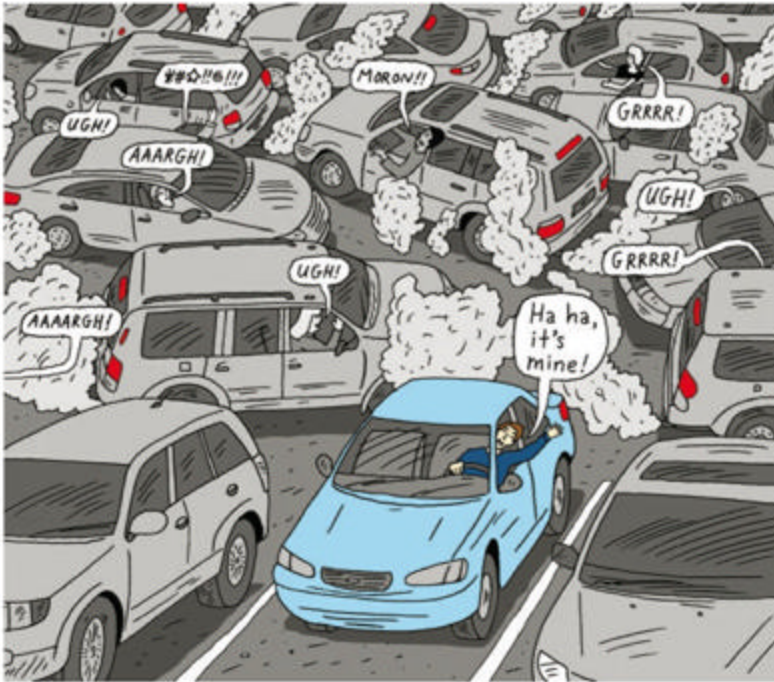
Drones are increasingly shredding the perception of

personal privacy as well. Small drones outfitted with GoPro cameras to create nifty aerial footage can easily become peeping drones harassing neighbors. Homeowners can try to guard their privacy by registering their addresses at NoFlyZone.org, or by using a \$1,000 acoustic sensor that will alert them to a drone's approach. "But we only detect them," says Brian Hearing of DroneShield, an 18-month-old company that has installed such detectors at 200 sites around the world.

The U.S. government is so concerned about the homegrown drone threat that it held a closed-door session with industry experts 10 days before the South Lawn incident. Daniel Herbert, who runs a Delaware drone business, attended the session, which featured three small drones carrying fake bombs. The government, he said, had a grim message: "If these things end up in the wrong hands, they don't have the tools to deal with them."

The most dangerous drones may soon approach the size of small planes, like those flown by the U.S. military overseas. Not only can they fly farther, but they can also carry bigger—and consequently deadlier—payloads, ranging from bombs to missiles to weapons of mass destruction. "There's nothing on the market right now that's as sophisticated as a Predator," says Jumper, the retired general. But that will change. "It's not too much of a leap from where we are now," he says, "to a stealthy cruise missile that you could launch from a flatbed truck and fly at a low altitude, making it extremely difficult to pick up on radar." ■

Tech



Park That Thing! Data—and the startups that trade in it—could help lessen traffic congestion in cities

BY KATY STEINMETZ

SEABROOK WAS ON HIS WAY TO meet me. That was the name of my valet from Luxe, a San Francisco startup that brings valet parking to wherever customers happen to be. In my case, that was the busy, high-rise-packed city center, where I have often circled the block like a maypole in search of a little unoccupied pavement. This time Seabrook was there, in his electric blue jacket, when I arrived. He whisked my car away and then returned it hours later to the same spot for \$15. That's less than I would have paid for street parking, had I been lucky enough to find it.

Luxe may sound like another absurd Bay Area convenience, but it's also one of many private and public outfits applying data science to the decidedly old-fashioned problem of city parking. "There's a

cascade of problems that are caused by having to drive around and hunt for spaces," says Donald Shoup, an urban-planning professor at UCLA. Namely: slowing public transport, wasting fuel, more congestion and dirtier air.

Studies suggest that up to 30% of downtown drivers may just be looking for a place to park their cars. Shoup's research, conducted on 15 blocks near the UCLA campus, illustrates how a little cruising can add up. He and his students found that the average time a driver spent hunting for parking was 3.3 min.; the average distance covered was a half-mile. That means that over the course of a year, the search for parking around just the Los Angeles campus would add up to 950,000 miles of travel, along with 47,000 gallons of wasted gas

and 730 tons of greenhouse-gas emissions. "In a day, the amount of cruising was more than the distance across the U.S.," Shoup says.

A fundamental problem, experts say, is that people expect parking to be free—and often it is. As a result, people will drive and drive rather than just popping in the first commercial lot they come to. And if parking is too expensive, drivers often don't stop at all, depriving merchants of business and cities of tax revenue. "It's important to get the price of parking right," says Shoup.

And that requires data. From 2011 until just recently, the city of San Francisco ran a pilot program called SFpark. Researchers embedded sensors in the pavement to monitor when spaces were occupied and then adjusted meter prices to drive traffic from packed blocks to underutilized spots. The prices for hot spots might be upped to \$4.25 an hour, while spaces two blocks away were lowered to 25¢. By the end of the test, drivers were spending only half as much time—about five minutes—looking for parking as they had before. "We know we need to reduce circling," says Lauren Mattern, who oversees parking policy for the city. "We need to make our streets safer by having fewer distracted drivers." Mattern is now working to apply those lessons to all of San Francisco.

Until then, tech companies will keep trying to disrupt the parking problem. Some, like Monkey-Parking, have gotten in hot water for trying to monetize public spaces. But others are trying to make paying for private parking more attractive. Boston-based Spot, which aims to be an Airbnb for personal spaces, has been welcomed by city officials, in part because it has the potential to reduce wasteful cruising. "The opportunity is absolutely massive," says Spot founder Braden Golub. "There's a lot of unused space out there." And Seabrook knows exactly where it is.



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SMARKING

Analyzes trends in data to help parking garages adjust prices automatically to stay more full, what they call "smart parking"

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Milestones



Mueller, who was 26, in an undated photo provided by her family

DIED

Kayla Mueller American aid worker

On Feb. 10, U.S. officials confirmed the death of Kayla Mueller. Her captors, the Islamic State of Iraq and Greater Syria (ISIS), claimed she had been killed in a Jordanian air strike; the truth may never be known. It is certain, however, that Mueller's own words will live on. In a letter she wrote from captivity in spring 2014 and released now by her family, Mueller insisted she would not give up. Here is an excerpt:

If you could say I have "suffered" at all throughout this whole experience it is only in knowing how much suffering I have put you all through... None of us could have known it would be this long but know I am also fighting from my side in the ways I am able + I have a lot of fight left inside of me. I am not breaking down + I will not give in no matter how long it takes. I wrote a song some months ago that says, "The part of me that pains the most also gets me out of bed, w/out your hope there would be nothing left..." a.k.a.—The thought of your pain is the source of my own, simultaneously the hope of our reunion is the source of my strength. Please be patient, give your pain to God. I know you would want me to remain strong. That is exactly what I am doing. Do not fear for me, continue to pray as will I + by God's will we will be together soon.

All my everything, Kayla

FILED

For Chapter 11 bankruptcy, **RadioShack**. The retailer has lost \$936 million since it was last profitable, in the fourth quarter of 2011.

AGREED

By Marvel Studios and Sony Pictures Entertainment, to team up on the **Spider-Man** franchise for the big screen. The character will appear in a future Marvel film, and the two studios will collaborate on the next Sony-owned **Spider-Man** solo feature.

DIED

Kenji Ekuian, 85, the Japanese designer of the Kikkoman soy-sauce bottle. He also worked on designs for the bullet train and Yamaha motorcycles.



NAMED

Cathy Engelbert, as CEO of Deloitte. The 29-year veteran of the company becomes the first woman to lead a Big Four accounting and consulting firm.

STRIPPED

Chicago team **Jackie Robinson West**, of its title as U.S. champions of the 2014 Little League World Series. An investigation found the team's officials had recruited players from outside its geographic area.

DIED

André Brink, 79, South African novelist who wrote in both Afrikaans and English and whose books came under fire from apartheid-era censors.

DIED

Dean Smith Coaching legend

By Roy Williams

When I was an assistant under coach Dean Smith, he would take our team to practice in front of the inmates at Central Prison in Raleigh, N.C. It was an eye-opening experience for our young men and a way to show those behind bars that they were not forgotten.

That was so coach Smith, who died Feb. 7 at 83. A champion coach, for sure, but foremost a teacher, a deeply human individual who placed a premium on social justice and lifelong learning—and one of the most extraordinary men I've ever known. He was a mentor to many, certainly to me. Michael Jordan called him a second father. He was a man of conviction who spoke out and took action where he saw injustice, particularly in race relations.

Tar Heel fans loved him for his basketball accomplishments at the University of North Carolina, and there were many over the 36 years he was head coach. His players loved him for teaching them to be men. I loved him for his gifts of knowledge, loyalty, support and compassion.

To all of us, his lessons live on each and every day.

Williams is head coach of the men's basketball team at the University of North Carolina



Smith in 1993



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James Poniewozik

Twilight of the Evening Stars

Brian Williams' and Jon Stewart's departures show that anchoring isn't what it used to be



ON FEB. 10, WE LEARNED THAT ONE OF the most respected voices in the media would be leaving his anchor desk, as would one of TV's biggest celebrities known for jokes and fake news.

That it is not immediately apparent which part of that sentence refers to Jon Stewart and which to Brian Williams tells you all you need to know about status, authority and trust in the media today.

Stewart's and Williams' careers had long seemed connected. They were two self-deprecating guys from Jersey who wore suits, sat at desks and talked about the news. Stewart was a comic who developed a surprising authority commenting on serious events. Williams was a serious journalist who developed a surprising ability to disarm audiences on sitcoms and talk shows, Stewart's included.

Their paths converged, then diverged. Stewart, at the height of his career, announced that later this year he would leave *The Daily Show*, which he'd hosted since 1999. Williams, at a low point, accepted a six-month suspension without pay from *NBC Nightly News* after he was called out for falsely claiming, on air, that a helicopter he'd flown on in Iraq had been shot down by an RPG.

But even before that, the two men's careers made a case study in the alliance between news and entertainment and in how cultural power had shifted from voice-of-God superstar anchors to a new kind of truth teller.

WILLIAMS' RISE AND DOWNFALL SUM UP THE contradictions built into the term *anchor*, perhaps the most unglamorous title ever given to a glamour job. A ship's anchor, after all, does its job under the surface, unnoticed. A news anchor's job is to ride astride the prow of the network's flagship and be seen. And Williams was the best of his generation at being visible, before he came unmoored.

Williams cracked wise on *30 Rock* and hosted *Saturday Night Live*. He slow-jammed the news with Jimmy Fallon and was a favorite of David Letterman. A *New York* magazine profile celebrated his "comic stylings." He was as smooth on the couch as at the desk—quick, sly, terrific timing, could tell a story.

One story he told more than most. In 2003, he reported accurately on NBC that he'd been on a helicopter flying considerably behind one that had been shot down. But the tale got taller over time, until on *Nightly News* itself, Williams reported attending



a New York Rangers hockey game with a soldier whom he credited with saving his life when Williams' chopper was hit. Soldiers who were there in 2003 called him out on Facebook, investigations ensued, and NBC suspended Williams, replacing him temporarily with understudy Lester Holt.

It's an open question if Williams will really be able to walk back into the job come August. But whether he does or not, Williams is probably the last of his breed of celebrity anchor we'll see on an evening newscast—for reasons that have nothing to do with whose helicopter got shot when and everything to do with the pitiless warfare of business.

Dinnertime news shows no longer have cultural primacy. (Thank Stewart for that.) They don't have the same power to drive the news cycle. (That's cable news and the Internet.) Above all, they don't have the money, which has flowed to morning shows. In 2013, NBC's *Today* alone generated more ad revenue than all three big-network newscasts combined.

Splashing out to put a big name in the 6:30 chair is a quaint remnant of a big-media, big-money past. In 2011, CBS replaced Katie Couric—then the priciest anchor, at \$15 million per annum—with the sturdy (and cheaper) Scott Pelley. Last year, when Diane Sawyer left *World News Tonight*, ABC tapped David Muir—an honor for him but also an admission that George Stephanopoulos (who got the title "chief anchor") was too valuable to take

Stewart said of his future plans, "I'm going to have dinner on a school night with my family, who I have heard from multiple sources are lovely people."



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away from *Good Morning America* and *This Week*.

Even Williams was a kind of postanchor anchor, building his celebrity largely outside the *Nightly News* itself. His brand wasn't based on gravitas so much as wit and charm. Ironically, that likability was more important to his image than being seen as a death-defying correspondent, making his unforced error all the more perplexing.

DON'T BUY THE PURITANICAL SUGGESTION THAT the siren call of fame tempted Williams into mendacity. You can be an entertaining character and a substantive truth teller—case in point, Jon Stewart. When he announced that he was stepping down, that was the anchor change that really felt epochal, like losing Carson and Cronkite at the same time.

Stewart can demur as much as he wants that he's just a comedian. We all saw through that joke. Since taking over from Craig Kilborn, whose *Daily Show* was a shallower, snarky news parody, he became the most loyally followed voice in late-night comedy and news alike.

And he earned it. So he was a fake anchor: his commentary was a kind of journalism nonetheless. *The Daily Show* really came into its own with the same story that set up Williams' downfall, the Iraq War—or, as *The Daily Show* branded it, "Mess O'Potamia." As WMDs failed to materialize, as the facts that built the case for war proved less than factual, Stewart and company hit a theme that later resonated in Katrina and the financial collapse: Maybe the traditional authorities and experts don't really know what they're doing. Maybe the press that was meant to put a check on them has stopped checking. Maybe someone needs to stand athwart history and declare, "This is BS."

A big part of that critique undermined the authority of media, including real news anchors. *The Daily Show* used satire and exhaustive research of video clips to break down manias stretching from *Bush v. Gore* to Ebola. Any honest media critic knew that Stewart was doing the job better than the rest of us. His show turned TV's own tools and language against it to spotlight buffoonery and bad faith, hot air and hypocrisy. Do that in print and you're an op-ed columnist. Stewart and his writers simply managed to find a format that people paid attention to.

And pay attention they did. Stewart came out on top of a 2009 *TIME* online poll asking who was the most trusted newscaster in America after the death of Cronkite, and young viewers in particular cited *The Daily Show* as a top source of information.

Stewart repaid the affection by caring. In a famous 2004 *Crossfire* appearance, he begged the hosts of the CNN shout show to stop "hurting America." (It is a fitting send-off to Stewart that before he left, he



got to see that show die not once but twice.) His 2010 Rally to Restore Sanity was passionate about Stewart's belief, usually frustrated by actual politics, that you could appeal to people's reason and sense of comity. And sometimes the show effected real change, as when he made a cause célèbre of a health bill to support 9/11 first responders, after it had been stymied in Congress. Stewart was an eye roller, not a fist shaker. But when he winced, he winced with feeling.

Stewart would be the first to protest being put on Williams' level. Indeed, on a recent episode, he half-defended his friend for being hounded over his embellishments: "Never again will Brian Williams mislead this great nation about being shot at in a war we probably wouldn't have ended up in if the media had applied this level of scrutiny to the actual f-cking war." (That Williams was a general in that very media in 2003, Stewart tactfully elided.)

But the anchor's ship has sailed anyway; the nature of authority has changed. It's not about a father figure telling you, "That's the way it was" but a sardonic uncle saying, "Here's how they get you to perceive this as the way it was." It values integrity over objectivity, passion over neutrality, truth telling over fact imparting.

The death of the anchor is in part the death of the mass audience and cultural common ground. But it may be a good thing. The anchor job has always been built on a myth larger than any war story: that news hosts were journalistic superbeings, dashing, daring and deserving of unswerving trust. Williams and Stewart have one last thing in common. They helped us let go of that illusion, in a sad week for the news, be it real or fake. ■

Before his suspension, Williams was a bedrock of NBC's lineup, drawing 9.3 million viewers a night



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With Friends Like These

It's time for an honest conversation about Saudi Arabia and the roots of Islamist terrorism



"WE ... SEE FAITH BEING TWISTED AND distorted, used as a wedge—or, worse, sometimes used as a weapon," President Barack Obama recently told the National Prayer Breakfast. "We have seen violence and terror perpetrated by those who profess to stand up for faith, their faith, professed to stand up for Islam, but, in fact, are betraying it. We see ISIL, a brutal, vicious death cult that, in the name of religion, carries out unspeakable acts of barbarism." A pretty strong statement, one would think. But it went largely unnoticed because of what the President said next: that Christians should be humble, because terrible acts—the Crusades, the Inquisition—had been committed in the name of Christ. Undoubtedly true too. My family was chased from Spain by the Christians in 1492, after Jews had lived there for centuries peacefully—if not totally free—under Muslim rule.

ASSORTED HISTORICAL IGNORAMI ROSE TO CHALLENGE the President on the Crusades, including, sadly, former governor of Virginia Jim Gilmore, who accused the President of not believing "in America and the values we share." But I'm not going to waste a column shooting ducks in a barrel. I'm more interested in another question. Why is the President willing to say all that stuff about ISIS terrorists and not call them what they actually are: Islamic radicals?

At first glance, this might seem a classic case of political correctness—which can be defined as avoiding hard truths in order to salve soft sensibilities. It's certainly true that it is unfair to indict a global faith followed by more than 1.6 billion people, the overwhelming majority of whom consider ISIS an insane distortion of the Prophet's teachings. "ISIS is a political movement," says Vali Nasr, dean of the School of Advanced International Studies and a former Obama Administration official. "It is an anticolonial movement, an attempt to separate whites from browns ... Why should we be coronating ISIS and giving it the credibility it craves by calling it an 'Islamic' movement?"

But ISIS is, most definitely, a twisted extrapolation of a religious-political trend that gained traction in the region about a hundred years ago, after the egregious European gobbling, slicing and dicing of the Middle East. When you look at all the straight-line borders in that part of the world, you can be sure the locals didn't draw them. Anger over

AN UNEASY PARTNERSHIP



EDUCATIONAL EXCHANGE

Under initiatives pioneered by the late King Abdullah, approximately 80,000 Saudi students are currently studying in the U.S.



TRADING UP

Saudi Arabia is the largest consumer of U.S. foreign military sales, totaling upward of \$97 billion, and exports to the kingdom exceeded \$35 billion in 2013, according to the White House

the European usurpation is one thing Shi'ites and Sunnis have in common. The Iranian revolution of 1979, which imposed a brand-new form of political Shi'ism on a freewheeling country, was a reaction to the Western-imposed government of the Shah. On the Sunni side, the radical Salafist movement began in the late 19th century, also as a reaction to Western imperialism and ideas. It has become a powerful strand of thought in the Arab world.

"We have a serious internal debate in one of the world's three great monotheisms," says Michael Hayden, the former CIA director. "It has to be faced head on." It is fine to call the ISIS adherents thugs and gangsters, but they are also Muslims. "Of course this is an Islamic issue," Hayden continues. "It's not about all Muslims or even the vast majority," but reactionary Islamic radicalism—militant Salafism—is the source of the ongoing violence.

And the wellspring of Salafism is Saudi Arabia's extreme, expansionist Wahhabi Islamic sect. Part of the reason Obama can't utter the words *Islamic radicals* is that we have not been able to have an honest conversation about our Arabian ally. The Saudi royal family is a source of stability in the region, and under the late King Abdullah, it was a mild force for reform, especially in education. But the Saudi elites have funded not just al-Qaeda but also radical madrasahs throughout the Islamic world. They do it cleverly, privately, through "charitable" institutions. The impact has been enormous. In the 1990s, I asked Benazir Bhutto of Pakistan how her country had changed in the previous 25 years. "I used to be able to go out on the street wearing jeans" and without a headscarf, she said. I asked her why she couldn't do that now. "The Saudis," she replied, immediately—a reference to the Saudi-funded madrasahs that were rapidly replacing the ineffective public schools in her country. The Taliban came out of those madrasahs, just as a great many of the ISIS criminals do now.

THIS IS NOT JUST AN OBAMA PROBLEM. BOTH PRESIDENTS Bush were way too close to the royal family. There is a secret section of a report by congressional intelligence committees that may relate to the Saudi role in the attacks. That section should be made public now, as an ongoing suit by the families of 9/11 victims has demanded. If we are going to continue to donate American lives to the fight—and sadly, we must, to protect our country from terrorist attacks—we need to be clear about exactly who the enemy is. ■

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NATION

The best talent is
flocking to join her
campaign. But first the
Clinton and Obama
teams must figure out
how to work together

GO TIME FOR

By Michael Scherer





OR HILLARY



Here she comes

A pro-Clinton sign outside a fundraiser in Indianola, Iowa, last September signaled the presumptive candidate's intentions

Photograph by Brooks Kraft for TIME

THE CALL CAME DURING PERHAPS THE darkest hour of the nastiest fight in modern Democratic Party history. After months of bitter sniping between Hillary Clinton and Barack Obama, vandals had attacked an Obama office in southern Indiana in May 2008, breaking windows, stealing an American flag and spray-painting the future President's initials on the storefront with phrases like *HAMAS VOTES BHO*. Just a day before the state's primary, Obama's staff and volunteers were forced to abandon the building for safer ground.

That's when Mitch Stewart, Obama's Indiana state director, took a call from Robby Mook, his counterpart and rival at the Clinton campaign. "He said, 'Hey, I'm Robby. If your staff or volunteers need to move out of an office, they can work out of the Clinton offices,'" remembers Stewart, who initially thought Mook was joking. But the Clinton operative was serious, effectively proposing to share a trench in one of the last battles of a brutal primary war. Stewart declined the offer, which never became public, but he never forgot it. "There was no reason he had to do that at all," Stewart says now. "At a moment like that, the generosity and kindness comes through."

Seven years later, such goodwill for Mook—and Stewart is by no means the only Obama acolyte singing his praises—could pay dividends for the Democratic Party and its favored nominee. Hillary Clinton has tapped Mook, 35, as her likely campaign manager. His task now, which is occurring far from public view, is at once overwhelming and delectable: to compile a team of strategists, technicians, managers

and salespeople from the best of the Clinton and Obama orbits for the most technologically advanced voter-mobilization effort in history. That's the easy part. Mook will then have to make that group, with its competing egos, allegiances and agendas, work as one under the spotlight of a general election.

As an official matter, this operation does not exist yet, and the senior players have been instructed not to cooperate with reporters looking to divine details of Clinton's still unannounced vision. But as word has spread about the Obama talent signing up for Clinton's campaign, some outlines of her thinking on 2016 have been revealed. Just as personnel choices often determine policy priorities at a new White House, staff lists can augur a road map for a campaign. And so far, those signals point to a campaign that is being designed to avoid the missteps of Clinton's first run for President while taking advantage of the technical genius of Obama's two successful campaigns. The failures of 2008 were many and glaring, but among the biggest was the fact that Clinton's message was focused on her "ready on Day One" experience, casting her more as an inevitable force of nature than a human being with a story accessible to voters. The campaign also suffered from a senior team that divided against itself in spats that became deeply personal, often spilling into the press.

Even worse, it was out of date from the start, built for a 1990s-style general election that did not profit from the technological advances that made raising small donations and organizing volunteer networks easier than ever before. Instead of embracing the future, Clinton's senior advisers



earned a reputation for mocking it. "They look like Facebook," Clinton's pollster Mark Penn famously told a colleague, derisively describing the young people who turned out to cheer Obama in Iowa. The Facebook candidate went on to win the nomination, and Clinton, who became a huge supporter of online organizing at the State Department, made it clear that she would not miss the digital boat again.

The Reset

THE TEAM TAKING SHAPE NOW IS DESIGNED to leave these problems in the past. Mook, who worked for Clinton and won in three states during the 2008 campaign, is

TEAM CLINTON MERGES WITH TEAM OBAMA



ROBBY MOOK

The likely Clinton campaign manager started in presidential politics as a field operative for Howard Dean



JIM MESSINA

Obama's 2012 campaign manager has become co-chairman of a super PAC raising money for the Clinton effort



JIM MARGOLIS

Obama's adman and storyteller, he has signed up for a candidate he once attacked



a field specialist steeped in the latest arts of organizing, having worked on Howard Dean's 2004 people-powered campaign to pioneer the sort of house-party-focused operations that Obama mastered. His partner on the campaign trail, Marlon Marshall, 35, helped lead Obama's 2012 field program before working at the White House and is expected to return to Clintonland. They are expected to be joined by Teddy Goff, 29, who ran digital operations for Obama in 2012, refining a high-tech machine that raised about \$504 million through online efforts in the 2012 cycle.

Clinton has also recruited two of her former foes from Obama's fold, despite the

Looking like a candidate *Clinton smiles for a fan's selfie at a Maryland gubernatorial campaign rally last fall*

roles they played in her 2008 downfall. Jim Margolis, 59, the two-time Obama campaign adman, helped author the Obama story and was directly responsible for the devastating one-minute Iowa television ad that cast Clinton as an insider running "the same old Washington textbook campaigns." His firm has close ties with the analytics wizards of the 2012 Obama campaign, led by Dan Wagner, suggesting that Clinton will focus once again on improving the targeting of campaign

ads. Margolis will be joined again by Joel Benenson, 62, the lead pollster for both Obama presidential campaigns, who helped craft the change message that Obama used to defeat Clinton's promise of experience in 2008.

The entire effort is expected to be overseen by John Podesta, 66, a veteran of both Bill Clinton and Obama's Administrations, who will join the campaign as a chairman. Podesta, more than anyone else, should be the bridge between the no-drama culture of Obamaland and the more rough-and-tumble instincts of the Clinton dynasty. Other Clinton veterans, including admaker Mandy Grunwald, 57, are expected to return as well. The goal, of course, is to go to voters with the best of both camps. "This is not going to be the old Clinton campaign," says Joe Trippi, Dean's old campaign manager, who has been watching the formation from a distance. "Again I think it will be the Republicans playing catch-up."

The Coming Clash

THE QUESTION OF HOW ALL OF THESE PEOPLE will get along is now the talk of political circles, though both camps are presenting a unified face before anything has a chance to go wrong. "The question for any staff is, Are you able to develop and execute a campaign plan with a complete focus on the best interests of the candidate?" says Ben LaBolt, Obama's 2012 spokesperson, who plans to sit this cycle out. "There is certainly an attempt to do that."

But the past is never past, as the saying goes, and the talk of this precampaign season is whether the unity will last. By



JOHN PODESTA

A wise man for Presidents Clinton and Obama, Podesta will take a senior role overseeing the operation



JEN PALMIERI

A former John Edwards aide, she has since worked in communications for Podesta and Obama



TEDDY GOFF

He helped raise more than \$500 million online for Obama in 2012, making him an early 2016 recruit

some measures, the facade has already begun to fall apart.

On Feb. 9, David Brock, a longtime Clinton ally and a veteran of the 1990s political wars, resigned his post on the board of Priorities USA Action, a super PAC founded by Obama veterans that had been designated to fund a blistering television-ad campaign on behalf of Clinton before the coming general election. He accused unnamed members of the group of orchestrating “a political hit job” against his principal fundraiser, Mary Pat Bonner, who reportedly receives high commissions in excess of 12% on the money she raises. “Frankly, this is the kind of dirty trick I’ve witnessed in the right wing and would not tolerate then,” wrote Brock, who had a career as a conservative Clinton basher before switching sides. He defended Bonner’s fees as a small price to pay for the enormous sums she raises for progressive causes, including his groups.

The break was the first big test of whether the two camps will be able to merge their operations or find themselves competing over control in the back rooms. Priorities—which is run by Buffy Wicks, a former Obama-campaign staffer, and co-chaired by Jim Messina, Obama’s 2012 campaign chairman—denied any involvement in the leak. Brock is a Clintonland favorite, both because he raises vast sums and because he is fiercely loyal. But the animosity among Obama loyalists for Brock, a political knife fighter not known for lowering temperatures, was impossible to conceal. “He is a cancer,” said John Morgan, a Florida lawyer and Obama fundraiser, to the *New York Times*.

Such name-calling wouldn’t matter if Clinton’s allies had not helped set up Brock and Priorities as partners for the coming campaign. Brock’s opposition research group, American Bridge 21st Century, has become the go-to shop for digging up dirt on Republican candidates and is expected to work closely with Priorities in its messaging strategy. Now Democrats fear that the public finger-pointing could exacerbate a divide within the Democratic donor class about whom to trust with their money, drying up funding streams just as the taps need to open wider. In a

It will fall to Mook to mediate many disputes while trying to run a billion-dollar campaign

matter of hours after Brock’s resignation letter leaked, Priorities staff and Brock released joint statements saying they were both committed to working together. The Priorities statement was signed by co-chairwoman Jennifer Granholm, a longtime Clinton supporter and the former Michigan governor. Messina, the group’s other co-chair, was notably absent from the statement, suggesting the potential for more fireworks to come. “This is just a blip,” says one Democratic insider. “But it will be one of many blips.”

As in most large organizations, the blips could tilt the scales. Just how Clinton handles her operation this time, amid a swirling narrative that she is unable to enforce order, will be a major test. “Everybody’s on board,” explains a second party veteran with links to both camps. “But on board what? Who is going to be in the room when she makes a big mistake? Her team isn’t a lot of people, but they take up a lot of oxygen. I think they are going to deal with the Obama operation as independent contractors.”

The Deacon

IT WILL FALL TO MOOK TO MEDIATE MANY of these disputes while trying to run a billion-dollar campaign. That sounds impossible and may well be, but if you could create a relentless supermanager to keep the peace, that person would look a lot like Mook—young, calm and technically adept, with a long record of winning both elections and the allegiance of his team.

He won high marks last year by leading a near flawless campaign for Virginia governor by Terry McAuliffe, one of the Clintons’ closest advisers. “Nobody

could have executed that campaign better,” McAuliffe told *TIME* about working with Mook. “In Clinton world there are a lot of friends, a lot of people who want to help, and what he is able to do is direct all of their energy in a positive way. He can make sure campaign staff can do their jobs without losing focus.”

Just a year earlier, the organizer who calls himself the Deacon on a private email listserv of allies literally helped write the book, for a group called the New Organizing Institute, on how campaign managers should run 21st century “engagement” campaigns that focus on motivating voters to see elections as movement-building moments. The bottom line: you cannot abandon traditional television ads and campaign craft, but you also have to expand the base turnout by exciting people in a way they don’t expect.

“Hillary had a hard time in 2008 telling her story, making herself accessible as a human being for voters,” says Marshall Ganz, the Harvard scholar of movement organizing who helped inspire a generation of Democratic operatives, including Mook. In 2008, Clinton would say things like “I am not running because I am a woman,” a phrase meant to impart her experience but which dissuaded some female volunteers from rallying around her. “There is a big difference between marketing and movement building,” Ganz explains.

The first campaign Mook ever ran was a small one, a state-delegate race in northern Virginia in 2005 on behalf of Dave Marsden, who won big with fewer than 13,000 votes. One of the campaign’s mottos: “Finally, something to get excited about.”

Marsden is facing re-election again this year, and when he heard Mook was up for running a top spot in the Clinton campaign, he texted a message to his former aide, offering to pay \$100 more a month than Hillary if he came back to his campaign. Mook wrote back, saying he would consider the offer. “I may go to offering him \$200 more,” joked Marsden. “It’s either Hillary or me.” —WITH REPORTING BY MICHAEL DUFFY, HALEY SWEETLAND EDWARDS, ZEKE J. MILLER AND JAY NEWTON-SMALL/WASHINGTON ■



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WORLD

SUDAN

THE FORGOTTEN WAR THE WORLD HAS MOVED ON, BUT THE SUFFERING CONTINUES

BY ELIZABETH DIAS

The displaced *A refugee from
Sudan's Nuba Mountains
fishes in South Sudan*

PHOTOGRAPH BY ANDREW MCCONNELL



SUDAN'S FOREIGN MINISTER Ali Ahmed Karti wanted to talk about Jesus, not the mounting allegations that his country's military forces have committed war crimes. "I deem myself a follower of Jesus," Karti, a devout Muslim, told TIME on Feb. 4 in his suite at the

Washington Hilton, as his aide served mint-flavored water. "His directives are suitable for Muslims and for Christians."

The hotel where he spoke was filled with thousands of religious and political leaders from different faiths and nations bringing much the same message to an annual gathering hosted by the Fellowship Foundation—an under-the-radar, conservative evangelical organization that calls itself "a network of friends"—that takes place every year in Washington as part of the National Prayer Breakfast. For two days, dignitaries like the Dalai Lama and Filipino boxer Manny Pacquiao mingled behind closed doors, chatting about everything from Jesus to Middle East peace negotiations, before they received an address from President Barack Obama. "When we come together on this basis, I think it will be easy for us to get through and open hearts," Karti said.

But Karti's presence, at a time when he is lobbying to remove Sudan from the U.S. list of state sponsors of terrorism, nonetheless made many uncomfortable. Senator Bob Casey Jr., a congressional co-chair of the Breakfast, objected to Karti's invitation to a meeting the Fellowship had scheduled with Secretary of State John Kerry and other diplomats during Karti's visit. Over the past three decades, Sudan's government has been implicated in what Congress has termed two genocides, one in the nation's south that cost as many as 2 million lives, in part from famine, and one in the nation's western province of Darfur, where an additional 300,000 people died, according to the U.N. The country's President, Omar Hassan al-Bashir, has been indicted by the International Criminal Court for war crimes and crimes against humanity. Karti oversaw the Popular Defense Force militias for a time during the first genocide. According to State Department cables released by

WikiLeaks, Karti is also credited with organizing the *janjaweed* militia, the brutal forces that terrorized Darfur.

The trouble continues. As Karti spoke of his affection for Jesus and his teachings, the NGO Human Rights Watch (HRW) was preparing to reveal a report on gruesome mass rapes in late October in the Darfur village of Tabit, perpetrated by the Sudanese Armed Forces. And miles away, in the center of Sudan's South Kordofan region, reports of civilian casualties from government bombing and artillery were arriving daily, as the dry season allows Khartoum to resume its campaign to reassert control in its border states. Just three weeks earlier, on Jan. 20, the Sudanese air force bombed a Médecins Sans Frontières (MSF) hospital for the second time, closing the facility and forcing MSF's Belgian team to pull its mission out of the country completely. "It is not any different than what is happening in Syria," says Tom Catena, a U.S. surgeon who runs the only full-scale hospital for the nearly 1 million civilians caught in the Nuba Mountains region of South Kordofan. "It just has been going on three decades longer."

When TIME questioned Karti in Washington about these reports, the Foreign Minister grew testy. Karti repeatedly denied any government wrongdoing, even when a reporter showed him an iPhone with photos taken days earlier by Catena displaying burned children and legless women, victims who had told Catena they were hit by government forces. Karti insisted that the government targets only combatants. "Nothing of that is happening," Karti said, averting his eyes from the images. "Nobody is targeting his own people. What happens is that those rebels, they get in the villages sometimes, they do it themselves, and they send it to you, to here, to the media."

The U.S. government disputes Karti's denial. Aerial bombardments by the government are routine—it is the only force in the region with planes—and the violence is one reason for the continued U.S. sanctions against Sudan. "The tactics used tend to have a greater impact on civilian populations," says Donald Booth, U.S. Special Envoy to Sudan and South Sudan. "We have continually urged the government of Sudan to avoid targeting civilian popu-



lations and trying to use civilians in the military strategy they are pursuing."

The most damning evidence against the government of Sudan came in the HRW report documenting mass military rapes in Tabit. Though the African Union United Nations Mission in Darfur (UNAMID) failed to find evidence that the rapes happened at all—government forces prevented peacekeepers from carrying out a credible investigation, and Sudan eventually shut the UNAMID's human-rights office in Khartoum before expelling two senior U.N. officials from the country altogether—HRW spent two months compiling evidence of the deliberate Sudanese army attacks.

At least 221 women and girls were raped in Tabit over 36 hours beginning on Oct. 30, 2014, the report found. HRW recorded 27 firsthand reports of rape, 194 other credible accounts of rape, and even confessions by two soldiers who said superior officers ordered them to "rape women" because the women were rebel supporters. Authorities then launched a cover-up, HRW found, which included detaining and torturing Tabit residents for telling the truth about what happened. "It's the same strategy, the same tactics, by the same people," says Andrew Natsios, the former U.S. Special Envoy to Sudan under President George W. Bush.



The ongoing fight Sudan government and paramilitary troops celebrate a victory in an area held by rebels in South Kordofan



Karti said any claims of rape in Tabit were lies invented to keep people in refugee camps, where NGOs can make money. Tabit has been rebuilt, he added, with modern schools, health care and police centers. “Nobody can expect a village like Tabit—which had been a home for some hundreds of the soldiers there, they have their homes there, they have their wives there, and they are living in a camp near that place—no one will expect those soldiers will come and rape by hundreds in that village,” he asserted. “Not only the police is there, but the army is there, and it will protect you against anyone who will infringe your security.”

The Forever War

GIVING THE ASSOCIATES OF ALLEGED WAR criminals permission to visit the U.S. is a reminder that the Obama Administration has complex goals in Africa. Obama entered the White House as a Sudan hawk; his 2008 campaign criticized the Bush Administration for inaction, and his Blueprint for Change promised immediate steps to end the genocide in Darfur. He also co-sponsored the 2006 Darfur Peace and Accountability Act, which denied visas and entry to any individuals or associates responsible for acts of genocide, war crimes or crimes against humanity in Darfur. Nicholas Kristof of the *New York Times* hailed Obama’s election as a “new chance” for Darfur. “Sudan fears the Obama Administration,” Kristof wrote in December 2008, “and now for the first time in years, there’s a real chance of ousting President al-Bashir and ending his murderous regime.”

That never happened. If anything, trying to craft policy on Sudan has only become more complicated. South Sudan gained independence in 2011—a development Booth champions as a White House accomplishment—but Sudan’s division failed to end the violence. The north kept the “Two Areas” of South Kordofan and Blue Nile, which both border South Sudan and in which rebel groups, many of whom used to be allied with what is now South

Sudan, are still deeply entrenched. As the two countries split, the southern areas of Sudan saw an influx of government and rebel fighters who were returning home from battlegrounds farther south. Soon that border region was dubbed the “new South,” replacing the now independent South Sudan that had been the source of rebellion against Khartoum for the past 30 years. Fighting between the government and an array of rebel groups in the region has been ongoing in the years since, with both sides accused of targeting civilians.

In late 2013, the Sudan government deployed newly created, paramilitary Rapid Support Forces, recruited from the remnants of the *janjaweed*, to the region. At the same time, Khartoum grew tangled in South Sudan’s new civil war, which has already seen 50,000 dead and 2 million displaced since fighting broke out in December 2013 between factions loyal to President Salva Kiir and to former Vice President Riek Machar. “You have a failed state, and you split it into two. What do you get?” asks Omer Ismail, a senior adviser for the nonprofit Enough project, which aims to end genocide and crimes against humanity. “You get two failed states.”

While all this has unfolded, Sudan has launched a charm offensive in the West. Sudan’s President al-Bashir has had a relatively successful few years in Washington, as his government lobbies to get out from under U.S. sanctions, which prohibit the import of Sudanese goods or services to the U.S. and the export of U.S. goods, services and technologies to Sudan. Karti had two meetings with Kerry in 2013, as well as a meeting with former Secretary of State Hillary Clinton the year before. Karti addressed the U.N. General Assembly in September and then gave a keynote at the U.N. International Day of Peace in Charlotte, N.C., an event hosted by a local, interfaith United Religions Initiative group.

Ibrahim Ghandour, the deputy chairman of al-Bashir’s National Congress Party, came to Washington the week following the National Prayer Breakfast to meet with Booth, two days before HRW released its report on the mass rapes. “Right now we are



Standing before the world Sudan Foreign Minister Ali Ahmed Karti addresses the U.N. General Assembly in 2013

trying to begin a more serious discussion with them about the range of issues that are of concern to us," says Booth, "and they in turn will continue to raise the issues of concern to them."

The Sudan government also hired D.C. lawyer Bart Fisher in 2011 to help Khartoum unravel the U.S. sanctions. Fisher, who runs his own law office, petitions the Treasury's Office of Foreign Asset Control to free specific sectors for trade and commerce. (His license does not allow him to lobby.) He works the legal end to do everything from permitting Sudan to import spare parts for civil aircraft to laying the groundwork for Khartoum's having an Apple Store one day.

Right now he is working to open commerce for the White Nile Sugar Co., which runs the world's largest and cheapest vertically integrated sugar-production facility, in Sudan's West Nile State—a mill that he says supports some 50,000 people in the region. "The truth of the matter is that this regime in Sudan has done what it said it would do—it allowed South Sudan to secede," Fisher says. "Obama hinted strongly he would relieve sanctions if Sudan carried out the Comprehensive Peace Agreement. That's sort of like Charlie Brown and Lucy moving the football."

It's not so simple. It's true that the Sudan government has been fighting an array of rebel groups, but its tactics have been heav-

ily criticized. According to the U.N., the Sudanese Armed Forces burned an average of about 22 villages a day in Darfur over the first half of last year. "What the Sudanese have liked to do in the past is basically to say, 'O.K., tell us what we need to do, one, two, and three, and then if we do it, then all this will go away,'" Booth says. "What we found is in general, that while they can say we didn't follow through—we've moved the goalposts is an argument we hear a lot—there were also other things that happened." Natsios puts it more bluntly: "The Sudanese government signs agreements all the time, and then they never follow them. They're just pieces of paper."

Turning the Page?

THOUGH THE KILLING HASN'T STOPPED, Sudan is no longer the cause célèbre it once was. There is no shortage of other

'THE SUDANESE GOVERNMENT SIGNS AGREEMENTS ALL THE TIME, AND THEN THEY NEVER FOLLOW THEM. THEY'RE JUST PIECES OF PAPER.'

—ANDREW NATSIOS, FORMER U.S. SPECIAL ENVOY TO SUDAN

foreign crises demanding global attention, from ISIS to Syria to Ukraine, and 2016 presidential hopefuls have, so far, all been silent on Sudan. The Obama Administration says it continues to press both Khartoum and armed opposition groups. The message to both is similar: There is no military solution to this sort of internal conflict, only a political one. "The Administration has paid a lot of attention to Sudan and South Sudan and will continue to do so," Booth says. "Our primary focus is on trying to bring about an end to the ongoing conflicts, so that those who are alive can remain alive, and to end the suffering of people in Darfur and in the Two Areas."

This is an ambitious goal. Fighting continues on both sides of the Sudan–South Sudan border, perpetrated by rebel groups and government forces. So does the suffering. Catena, the surgeon who runs Mother of Mercy Hospital in the Nuba Mountains, is left to treat the burned children that Karti dismissed. The hospital is just now overcoming a measles epidemic—1,400 patients were admitted with the highly contagious disease over the past eight months. The Sudanese government blocks all humanitarian aid to the region, which means the population gets no vaccines or drugs for common but deadly ailments like TB or malaria. Yet the reaction in the West is muted. "Sudan deserves better," says the Enough project's Ismail. "We need the world to hear from us."

Karti believes the U.S. may somehow decide to bring an end to its sanctions regime, much as it recently began to with another outlaw country after a 50-year trade embargo. "Maybe, through time, we'll be able to go through the same line of Cuba," says Karti. It seems Khartoum believes that its crimes are in the past—and the rest of the world should move on. Or as Fisher puts it: "With Sudan, it's time to turn the page." But the lessons of Cuba suggest the opposite. When both political parties agree, the U.S. can be slow to forgive or forget. —WITH REPORTING BY NOAH RAYMAN/NEW YORK ■

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Ascent Miners at the Chelyuskintsev coal mine in the Petrovskiyi district of eastern Ukraine ride an elevator toward ground level

A person is shown in silhouette against a bright, circular light source, likely a headlamp, in a dark, industrial environment. The person's face is obscured by the light, and their hands are visible at the bottom of the frame, resting on a dark surface. The background is filled with dark, textured elements and other distant light sources, creating a somber and gritty atmosphere.

WORLD

BENEATH THE FRONT LINES

As political leaders sit down for a new round of peace talks, a brutal ground war is tearing apart Ukraine's coal-mining heartland

Photographs by Jerome Sessini

HALF A MILE BELOW THE BATTLEFIELD in eastern Ukraine, the team of coal miners didn't hear the impact of the mortar that nearly killed them on Nov. 22. The projectile struck the shed that houses the mine's electrical circuits, shutting down the ventilation system and the elevator in the mine's deepest shaft. More than 50 men were now trapped down below.

Jerome Sessini, a French photographer, was with them that day in the mine, which is in the Petrovskiy district. Also present was the deputy director of the mine. "Everything is O.K.," Sessini remembers hearing the mine official say. "Just walk and everything will be fine." But the fear showed in the deputy director's eyes as he knew the danger they faced: they had enough oxygen for about two hours before they would suffocate.

In the end the miners were luckier than many of the civilians trapped in the cross fire in eastern Ukraine. Since it started in April, the war between government forces and Russian-backed separatist rebels has taken more than 5,000 lives, many of them lost to the notoriously inaccurate rocket launchers—with Russian names meaning "hurricane" and "hail"—that both sides of the conflict use against each other.

The U.S. and its European allies have struggled to stop or even slow the carnage. A peace deal that the Western powers brokered in September was frequently violated by both sides before collapsing in January when the rebels launched a new offensive, seizing towns and taking control of a strategic airport near the city of Donetsk. According to the Ukrainian government and Western officials, the rebel forces are getting their weapons and fighters from Russia. Moscow denies any military involvement in the conflict.

Vladimir Putin, the Russian President, has resisted Western pressure to negotiate a cease-fire in Ukraine, even as the U.S. and Europe have tightened economic sanctions on Russia. Pleading for more Western support, Ukrainian leaders have meanwhile asked for supplies of what they call defensive arms, such as antitank weapons and reconnaissance drones, to fight the advanced Russian hardware now in rebel hands. But President Barack Obama has so far avoided arming Ukraine.

"I have not made a decision about that yet," Obama said on Feb. 9 during a press conference in Washington. Standing beside him, German Chancellor Angela Merkel placed her hopes on



Men at work A miner gestures to a supervisor at a storage area for coal situated at the back of the mine complex



the peace talks that were due to commence the following day in Minsk, Belarus, involving envoys from Russia, Ukraine and the separatists as well as European mediators. “Maybe nothing will come out of it,” Merkel said. “But I myself would not be able to live without having made this attempt.”

Merkel’s realism is understandable. The battles to control the eastern regions of Donetsk and Luhansk have reduced their neighborhoods and villages to shrapnel-pocked ghost towns, their residents either fleeing their homes or cowering in basements and bomb shelters left over from World War II.

Ukraine’s coal industry, which was the fourth largest in Europe only a year ago and the engine of the national economy, has been paralyzed by the fighting. Sixty-six of eastern Ukraine’s mines had been closed by the time winter set in, according to Euracoal, a Brussels-based trade association, and just 60 remained in operation. The drop in production—down almost 60% in October compared with the same month a year earlier—has created a critical shortfall just when the fuel is needed most to heat homes and produce electricity.

The miners who have stayed behind to work often go without paychecks for months, hoping to be compensated once the war subsides. “They try to show they are having a normal life,” Sessini says. “But you can see in their faces a kind of anger and frustration and depression.”

Some of those who blame Ukraine for their suffering have joined the separatist militias and placed their hopes in a broader Russian incursion to push the Ukrainian forces back. But the vast majority of miners have tried to stay on the sidelines, sometimes helping to clear the dead or find victims among fresh rubble.

Belowground, as the miners continue their work and mortars continue to rain down from both sides of the conflict, they are as likely to become casualties as they are to become rescue workers. The miners ultimately escaped from the blacked-out mine shafts that day in November on a rusted cable car powered by a small rescue generator. It took the men half an hour to find it, using only their headlamps to light the way, but it allowed them to travel by an underground railroad to an elevator that ran off a power source unaffected by the shelling. With less than an hour of oxygen to spare, the men reached daylight—safe from the dangers belowground but exposed to the shelling from above. —SIMON SHUSTER AND ANDREW KATZ

Mine craft Clockwise from top left:

Miners on a bus inside the complex; two men get changed before a shift; the control room; a miner at work more than 2,600 ft. below ground level







Heading down

Two miners wait for an elevator that will take them to the bottom of the mine



A Different Prescription

The pharmacist running CVS wants his drugstores to become your doctor's office

By Eliza Gray

IN THE FIFTH SEASON OF *CURB YOUR Enthusiasm*, Larry David visits a pharmacist to fill his father's blood-thinner prescription. "You know, there's another drug on the market that I personally like a lot better," the pharmacist tells Larry. "But the doctor prefers this one?" Larry says. He holds up his hands like a scale and weighs his options. "Doctor," he says, holding up one hand, then "pharmacist," holding up the other. He decides: "I'll go with the pharmacist."

You may too if Larry Merlo has his way. Merlo, 59, is the CEO of drugstore giant CVS Health. Trained as a pharmacist himself, Merlo has ambitions to play a much bigger role in your health care. He's already pretty involved. Last year at 7,800 stores, CVS, the second largest drugstore chain in the U.S., filled more than 700 million prescriptions and administered 5 million flu shots—all while selling customers everything from groceries to gift wrap.

Now Merlo says the drugstore can do more. In his vision, CVS will leverage its sizable MinuteClinic business—which already has 970 locations—to diagnose patients, decide on treatments and then sell them the pills they need to get well.

In its role as the pharmacy-benefits manager for some 65 million people, CVS also negotiates the price of those pills and helps decide which ones get reimbursed under various insurance plans. Merlo would also like America to stop smoking: he roiled the tobacco industry last year by dropping the sale of cigarettes in CVS stores. And if that causes some customers to have withdrawal pains, the CVS pharmacy can fill a prescription for a drug that helps them quit.

By taking on more of the role of your doctor as well as that of your druggist, CVS looks to grow beyond its already considerable size (\$4.6 billion in earnings for 2014). But Merlo argues that the stakes are far higher. He thinks CVS can save lives—and hundreds of billions of dollars in unnecessary health care costs annually—by efficiently treating Americans' routine sniffles and aches, nudging them to take better care of themselves and making sure they take their medications when they're supposed to.

Regardless of whether getting a strep test along with a quart of milk appeals to you, many health experts say Merlo may be on to something. The Affordable Care



Counter proposal
CVS Health CEO Larry Merlo says pharmacy clinics can take on more of U.S. health care

Act—Obamacare—is driving America’s health system to widen access to care while reining in costs. That’s stoking fears that doctors will be scarce and patients will pay more out of pocket—but it’s also spurring innovation, with doctors and entrepreneurs experimenting with all kinds of new approaches, including new kinds of primary-care practices. (See “Medicine Gets Personal” in *TIME*’s Dec. 29, 2014–Jan. 5, 2015, issue for one example.) Against that backdrop, it isn’t much of a stretch to reimagine the corner drugstore as a health care store. And there’s no question Merlo’s plans are drawing attention: that was his mustachioed face a few seats from Michelle Obama at the State of the Union address on Jan. 20.

Merlo says America’s changing system will lead to the “retailization” of health care, a fancy way of saying that patients are becoming more like consumers and that health care is becoming more like any ordinary consumer product. But if that’s so, the consumers will need to become as savvy about shopping for a checkup as they are about the shampoo and snacks that CVS sells—and they may wonder if they want to take medical advice from

a company deeply embedded in the sale of prescriptions. In other words, are they really ready to go with the pharmacist?

The List-Price Checkup

ON A RECENT FRIDAY AT THE CVS MINUTE-Clinic in Woonsocket, R.I., the doctor isn't in. The doctor is never in at a MinuteClinic; patients are seen by a nurse practitioner, a health care professional with a graduate degree, advanced training and the ability to prescribe medications. The nurse practitioner on duty at the moment is a young woman in a white coat named Amelia Pires. She sees patients ranging in age from 18 months—the minimum at MinuteClinic—to the elderly, and she treats dozens of conditions, from mononucleosis and shingles to ear infections, for an average price of \$89. Or less if, like those of the majority of patients, the visit is covered by insurance.

Retail clinics got their start in the early 2000s as places for the uninsured to purchase basic health services, and they've become an easy option for a flu shot and a familiar sight everywhere from drugstores like CVS and its competitors to big-box outlets like Walmart. Now, with the ranks of the insured growing in the Obamacare era, they're evolving to fill a different kind of need. They offer convenient after-hours visits for patients who can't get in to see their doctors; they also serve as triage centers that can handle minor illnesses for patients who don't have a primary-care doctor, for hundreds of dollars less than it would cost in the emergency room.

For the insured, they offer a particular type of bargain. Plans with high deductibles that require substantial initial out-of-pocket payments are becoming more popular. MinuteClinic offers routine treatments at a lower cost than the average physician. Thanks to posted prices, what you see is what you pay: \$59 for a kids'-camp physical, for instance, or a maximum of \$99 for flu symptoms. The underlying economics are simple to understand: according to the Bureau of Labor Statistics, the median salary for nurse practitioners and physician assistants in the U.S. is \$90,000; for medical doctors in family practice, it's more than double that.

Though they still account for a small share of patient visits—MinuteClinic expects 5 million to 6 million visits in 2015, compared with nearly 600 million outpatient visits to physicians' offices and nearly 100 million to the ER—they are growing

The New Doctor's Office? What a MinuteClinic Does

Illnesses

For \$79 to \$99, a nurse practitioner will treat routine conditions such as allergies and strep throat

Injuries

You can't get a broken leg set—but clinics will handle suture removal, so you can avoid a return trip to the doctor or hospital

Vaccinations

CVS gave 5 million flu shots last year and offers polio and measles shots as well

Screenings

Clinics offer blood-sugar and cholesterol tests



in popularity. And CVS is doubling down on the strategy. Its 970 clinic outlets are already more than twice the number of its closest competitor, Walgreens—and it hopes to open more than 500 new ones by the end of 2017. One sign of the growing battle: while Walgreens pushes the ad slogan “At the corner of happy and healthy,” CVS changed the name of the entire company to CVS Health. Merlo talks about the drugstore as if it's the new doctor's office. “If you look at the environment today, the demand for primary care is outstripping the supply of primary-care physicians,” he says. But, he adds, there's not actually a shortage of care: “It's the role that retail MinuteClinics are playing.”

For traditional family physicians, the idea that retail clinics should do much more than dispense flu shots is equal parts unnerving and exciting. As federal reimbursements work to shift doctors' incentives away from ordering up zillions of tests and toward keeping patients healthy, physicians may come to rely on retail clinics for support. But the partnership

between doctors and retail clinics is in its infancy, leaving gaps that raise important questions about the quality of care.

Proponents say retail clinics can be a valuable link in a chain that also includes the primary-care physician. A partnership between Cleveland Clinic and CVS, launched in 2009, suggests how this can work. Dr. Michael Rabovsky, chairman of family medicine at Cleveland Clinic, says the program grew out of doctors' recognition that the patients in their practice liked to be able to walk into a retail clinic after hours and get treatment without an appointment. Thanks to the partnership, Rabovsky and other doctors on his team get an email that lets them know when their patient has been treated at a MinuteClinic, allowing the doctor to follow up. Cleveland Clinic doctors also oversee the MinuteClinics in the area, offering answers over the phone if a nurse practitioner has a question and reading over charts to look for ways care could improve. The relationship works well enough that Rabovsky says CVS may someday help

doctors at Cleveland Clinic manage their patients' chronic diseases. "If you asked me to predict," he says, "I'd say there is going to be a future for it."

Others see a trickier balance. Medical-record coordination in many places simply isn't that advanced, says Dr. Robert Wergin, a practicing physician in Milford, Neb., and president of the American Academy of Family Physicians. That means many physicians don't necessarily find out when their patients have received care at a retail clinic, and that can be dangerous if the patient underestimates the severity of a complaint. Says Wergin: "What you find in the practice of medicine is that every sore throat is not just a sore throat."

CVS acknowledges that issue—and says it is prepared. It's not unusual for MinuteClinic to send drop-in patients out of the store to a place that can offer a higher level of care like an urgent-care center or emergency room. "People don't realize how sick they are," says Pires, the nurse practitioner in Woonsocket. "MinuteClinic is probably not somewhere where you should be experiencing chest pain."

Things are more complicated for patients who don't have a primary-care physician (which describes half the patients who visit MinuteClinic, according to CVS). Without the high-tech record sharing that happens with CVS's 51 health-system partners like Cleveland Clinic, nurse practitioners at a MinuteClinic may not have access to a patient's history or the ability to update a primary-care physician if the patient does eventually get one. And though MinuteClinic nurse practitioners proactively offer to help patients find a primary-care doctor, it is ultimately up to the patient. For that reason, Wergin is disconcerted by the idea that MinuteClinic might offer services for the chronically ill. "If you are getting your blood sugar checked, you should see a doctor who knows the disease," he says.

The Pharmacist CEO

EXAM ROOMS AND TREATMENT PLANS ARE a long way from where CVS started. Its history traces back to 1963, when it was a health-and-beauty store in the working-class town of Lowell, Mass. Eager to take advantage of the easing of price controls for drug products by selling their merchandise at a discount, the founders—brothers Stanley and Sidney Goldstein and their partner, a salesman at Procter & Gamble—called the business Consumer Value Stores.

CVS began selling pharmaceuticals in 1967 and in 1990 acquired Peoples Drug—where a young pharmacist in Washington, D.C., named Larry Merlo had become a regional vice president. After Peoples became part of CVS, he ascended the ranks until he became CEO in 2011. Merlo's colleagues say the CEO—noticeably down to earth in person—still clears the shopping carts out of CVS parking lots out of instinct from his days as a store manager and pharmacist.

Merlo's background as a pharmacist seems to be at the heart of a goal that's less splashy than the MinuteClinic expansion but may play a more crucial role in the health of the average American: getting people to take their medicine. Specifically, getting them to take it on time and as instructed. Failure to take medication correctly costs the U.S. health care system up to \$300 billion and results in 125,000 deaths every year, according to the Centers for Disease Control and Prevention. Estimates show that about a third of patients fail to fill their new prescriptions, for all kinds of reasons—because they are too expensive, have unpleasant side effects or seem to have no impact on their symptoms.

CVS thinks it can help with cutting-edge ideas like using data to identify high-risk patients and filling their prescriptions in prepackaged morning, noon and night doses, or alerting their physicians that they haven't purchased a medication. As a prescription-benefit manager, CVS can also design employee prescription plans so that patients aren't charged any co-pay for vital prescriptions that treat chronic problems like high cholesterol. Since

roughly half of the U.S. population suffers from a chronic illness that requires numerous prescriptions, this kind of medication management keeps growing in importance.

What's Really in Store?

CVS ENVISIONS SAVINGS FOR THE U.S. health care system—and, of course, profits for its shareholders. Health care leaders say there's logic there: in the Obamacare era, physicians may come to rely on retail clinics to outsource the little things so they can take better care of more patients.

What remains to be seen is whether there are risks that come with the potential. How will CVS's business selling prescriptions affect the policies and decisions in its clinics? That inherent conflict of interest has long concerned medical professionals, though how it affects patients isn't clear. Consumer advocates worry that CVS is already too powerful, thanks to its role as a pharmacy-benefit manager. The company recently made an exclusive deal to cover Gilead Sciences' controversial drugs for hepatitis C, making them the only option for patients whose prescriptions CVS manages unless they get prior authorization from their doctor.

That arrangement reflects CVS's ability to pit pharmaceutical companies against one another to get the lowest price. CVS says that this saves patients money and that doctors and patients can seek exceptions. "There is a process to work through the physician and the benefit-plan design to ensure that the patient is on the right therapy at the end of the day," says Merlo. Overall, CVS says, MinuteClinic patients walk away with prescription costs on a par with or lower than those of other providers like emergency rooms.

Merlo is wasting no time in thinking up new ways to play a bigger role in customers' health. Any day now, CVS will launch a technology-development office in Boston with 100 employees hired to devise everything from new ways for consumers to manage medications on their phones to telemedicine programs that will let MinuteClinic patients see nurse practitioners through a computer screen. And now that tobacco has been purged from the shelves, customers will soon notice a healthy food makeover too. Merlo calls CVS's journey from beauty store to health care provider an "evolution, not a revolution." For CVS's 100 million customers, the impact will be huge either way. ■

Retail clinics can offer fast treatment at relatively low prices—but critics say patients with chronic conditions need to see a doctor, not a drugstore



BEEFED UP

New chefs and new tastes are transforming the iconic hamburger

BY JACK DICKEY/NEW HAVEN

NEW HAVEN, CONN., HAPPENS TO BE the birthplace of two of America's undisputed cultural treasures: the hamburger and the author of this story. The chamber of commerce might also cite the good universities and even better pizza. None of us native sons is above using the humble old town as a springboard to international acclaim—take George W. Bush or Michael Bolton—but I've learned there's something admirably modest, and

very New England, in sticking around and keeping your head down.

Which brings us to two plots of real estate, separated by a little less than two blocks, in present-day downtown. There's a squat redbrick structure with Bavarian architectural accents situated in the front of a parking lot on Crown between High and College. That's Louis' Lunch, established 1895. The official legend says Danish immigrant Louis Lassen invented the

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hamburger sandwich there in 1900. And on Chapel between College and Temple, facing the Green, there's a tall, freestanding glass structure: Shake Shack, established 2012. Its hamburger legend is now on file with the Securities and Exchange Commission.

On Jan. 30, Shake Shack held its wildly successful initial public offering on the New York Stock Exchange. Shares more than doubled on their first day of trading, making founder Danny Meyer's stake worth more than \$300 million. Two days earlier, fresh off one of its worst financial years in decades, McDonald's announced that Don Thompson, its CEO, would step down after less than three years on the job. (Officially, he retired.) Seismic stuff by burger-world standards. Sure, Shake Shack is small—its first three quarters in 2014 generated \$84 million in revenue, compared with \$20.8 billion for McDonald's. Nevertheless, the contrast of a struggling behemoth and a surging upstart symbolically validated the growing "fast casual" sector, which includes Shake Shack, Five Guys and Smashburger, among many others.

American restaurants cooked up an all-time-high 9 billion burgers last year, reports market researcher NPD. In spite of warnings about their nutritional ravages and the perhaps questionable business practices that bring them to us, we still love our burgers.

No other dietary staple casts such a sociocultural shadow. The roadside burger's midcentury rise paralleled the construction of interstate highways and the birth of modern consumer culture. Hot, fast and affordable hamburgers were a uniquely American triumph in an era defined by unique American triumphs. Now, America is graduating from cheap burgers to better burgers.

Just as the entrepreneurs behind the old burger empires symbolized boomer capitalism, the new burger purveyors reflect a new breed, marketing themselves as artisanal, small-batch operators—rising to take on the giants, one bespoke burger at a time.

Our Burgers, Ourselves

WHAT MAKES A BURGER? THE ANSWER HAS never been especially obvious. *Hamburger* comes from Hamburg steak, a ground-beef

dish dating from 19th century Germany. But Hamburg steak no longer turns up on many menus. At the very least, a burger is a clump of hot, cooked ground meat (usually beef) or a substitute, on bread (usually a bun) or a substitute. The Big Mac? A burger. A zesty lettuce-wrapped turkey patty with Muenster and mustard? A burger, some dieters will tell you. Meatball and marinara on a scone? Sure, a burger too.

The ingredient list matters less than the sensation. A proper burger offers varying levels of resistance to the teeth, with each soft half-bun giving way en route to the meat, the best of which has multiple characteristics of its own—a hot, hard crust and a juicy interior. Texturally the whole package should fuse the perks of a crisp apple and a broiled steak. Toppings add other dimensions: Lettuce, onion, pickles and tomato can give their own fresh, watery crunches. Bacon will do the same, minus the water and the freshness, plus cholesterol.

One might divide the burger's story into a few phases. There's the late 19th century pre-fast-food disputed-origins phase that includes Louis' Lunch and other contenders, such as Fletcher Davis, who claimed to have invented it at his Athens, Texas, lunch counter in the 1880s, and "Hamburger" Charlie Nagreen, who sold meatballs on buns at the 1885 Seymour, Wis., county fair. The burger boom began in earnest in 1921, when a Wichita, Kans., fry cook named Walter Anderson joined forces with his real estate broker, Billy Ingram. Anderson had the novel idea to grill his patties and put them on buns, while Ingram fancied himself a titan of industry and went about vertically integrating the whole operation. Soon identical White Castles were slinging tiny 5¢ hamburgers across the Midwest.

And yet it's McDonald's, not White Castle, whose rise came to define the 20th century business world. In 1948, California's McDonald brothers abandoned their drive-in to build a burger shop. Ray Kroc, the Illinois businessman who sold them their milk-shake mixers, saw a major opportunity in their speedy operation and profit margins. He bought out the brothers and spread his gospel by franchising the chain—letting small-business investors open identical shops with his branding and methods for a cut of the action. The '50s and '60s brought Wendy's, Burger

Burger Wars

HOW THE CLASSICS STACK UP TO THE UPSTARTS



McDonald's

1948, San Bernardino, Calif.

SIGNATURE BURGER: Big Mac

(Calories: 530; fat: 27 g; carbs: 47 g; sodium: 960 mg)

SELLING POINT: The longtime industry leader has essentially the same goal it always had—a hot burger, delivered in a minute, costing less than \$5. Making the burger good, though, and giving it a young-adult appeal, has so far proved tricky.



Shake Shack

2004, New York City

SIGNATURE BURGER: Single Shackburger

(Calories: 490; fat: 30 g; carbs: 25 g; sodium: 895 mg)

SELLING POINT: It's a burger with a mission—"stand for something good"—known for fresh ingredients and simplicity. But will the service and ingredient sourcing hold up as the business, with only 63 stores today, opens 10 new locations each year?

King, Jack in the Box and Hardee's, while In-N-Out grew its West Coast reach. The supremacy of the fast-food burger would be essentially unquestioned for 40 years.

But fear over mad cow disease and rising obesity rates—the children raised on impeccably marketed fast food had grown up large—conspired to shake fast food's foundation around the turn of the century. Journalist Eric Schlosser reported on and synthesized the arguments against the business in 2001's *Fast Food Nation*, and filmmaker Morgan Spurlock vivified the anti-fast-food case with 2004's *Super Size Me*. For one month he ate only at McDonald's. He spooked his doctors and gained nearly 25 lb., or 11.3 kg. (The movie grossed more than \$11 million domestically.) What would come of this agita? The burger's demise? Not quite. Enter the “better burger.”

New Models

RESTAURANT ANALYSTS SPLIT THEIR WORLD into two segments. There are full-service restaurants (every place with waitstaff, ranging from starched-tablecloth-and-Dover-sole sit-down joints to endless-mozzarella-stick chain types) and limited-service restaurants (primarily what people would call “fast food”). But limited service has in the past two decades spawned a stepchild category: fast-casual restaurants. Think Panera Bread, Chipotle Mexican Grill or Jimmy John's Gourmet Sandwiches. It's this group, characterized by made-to-order dishes and more-complex flavors, that has intrigued most big-picture restaurant observers for the past decade and a half, culminating in Shake Shack's blockbuster January IPO.

What does fast casual have going for it? For the owners, the restaurants promise an essentially doubled average per-check expenditure compared with fast food (\$8 to \$12 vs. \$3 to \$8) without the headaches of a full-service outlet. It's a small segment of the U.S. restaurant business, just 7.7% of total sales for 2013, or \$34.5 billion, according to research firm Technomic. But it's a growing one, attractive to investors in a climate where interest in food has spiked but fast-food visits among millennials appear to have flattened.

Seizing on the trendiness of the culinary arts, fast-casual joints like to tell stories about the sourcing of their ingredients and how they're cooked. The goal

is for diners to feel good about what they eat. (Taking the food-stories concept to its logical extreme, Chipotle even enlisted highbrow vegetarian novelist Jonathan Safran Foer to curate a “Cultivating Thought Author Series” of little essays on its cups and bags.)

From his late-'90s corporate perch as McDonald's chief marketing officer, Tom Ryan says he saw an opportunity opening up before him. Ryan has a Ph.D. in flavor-and-fragrance chemistry and a food-world track record to match: he's credited with inventing Pizza Hut's stuffed-crust pizza and McDonald's McGriddle. “I saw that burgers were America's favorite food, but people were dispassionate about the choices they had—McDonald's, Burger King, Wendy's,” he recalls. “I wanted to sell burgers made with some level of care and understanding, fast casual.” So Ryan opened the first Smashburger in Denver in 2007, with loose-packed Certified Angus beef and real glassware. The chain, which is privately owned and considerably bigger than Shake Shack, now has 307 locations. Ryan says the pizza business will soon follow burgers into the artisanal realm.

Pat LaFrieda Jr., a third-generation meat wholesaler whose operations are now based in New Jersey, says he too watched in 1999 as New York City restaurants' buying tastes began to change. LaFrieda says chefs used to buy his family's chopped beef—known around town for its taste because it consisted only of ground whole cuts—for their home cookouts, nothing more. Then he started getting calls for different blends for burgers: a little more richness, perhaps, maybe some brisket here or some short rib there. He would make the blends himself, tasting the meat raw from the grinder, so as not to let cooking “compromise the flavor profile.” He ground Shake Shack's meat, among others. How good has the better-burger era been for him? In 1994, LaFrieda says, the business had annual sales of \$2 million. In 2014, he sold \$140 million worth of beef—20% of that the chopped product once confined to home cookouts.

Established chains have tried to get in on the act. Chili's, for instance, now has a “craft burger” menu, piggybacking on the craft-beer boom. And Wendy's, whose burgers enjoy a better reputation than Burger King's and McDonald's, according to *Consumer Reports*, has in recent years tried



Burger King
1954, Miami

SIGNATURE BURGER: Whopper

(Calories: 650; fat: 37 g; carbs: 50 g; sodium: 910 mg)

SELLING POINT: BK, which changed corporate hands several times before merging with Canadian giant Tim Hortons in 2014, touts flame-grilled burgers with the marks to match. But it has recently sold off many of its owned-and-operated restaurants.



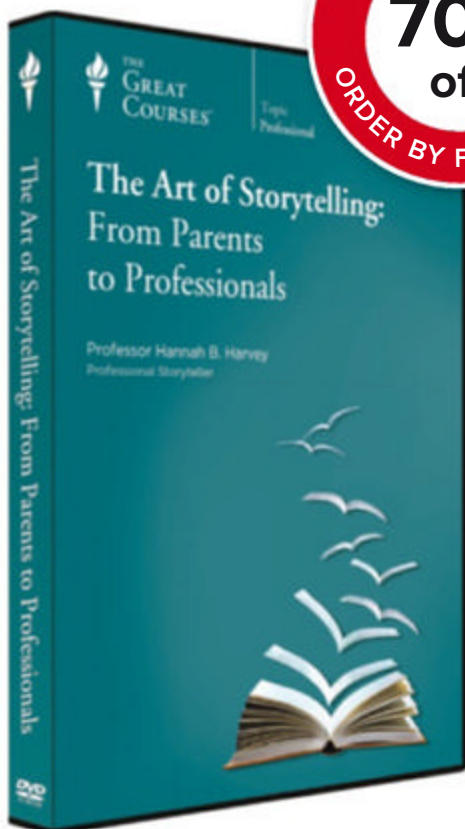
Five Guys

1986, Arlington, Va.

SIGNATURE BURGER: Little Cheeseburger

(Calories: 550; fat: 55 g; carbs: 39 g; sodium: 690 mg)

SELLING POINT: The chain boasts of its burgers' customizability, with more than 250,000 ways to add free toppings, from jalapeños to grilled onions to steak sauce. Each order of fries is heaped with extras. Yet the health-conscious should steer clear—the default burger is a double. A single-patty sandwich is called a “little.”



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unusual flavor combinations and hyped up its story. “Our beef is fresh, never frozen, all North American. It’s practically local,” says Brandon Solano, Wendy’s marketing chief.

McDonald’s has worked up its own better-burger play: Create Your Taste, a program to allow extensive customization. Diners will design their burgers on a touchscreen in-store. The concept will be presented in March to franchisees, and the company plans to roll it out to 2,000 locations this year. “This is not just about food. It’s about the overall experience,” Thompson told investors before his departure. It will also change the company’s relationship with franchisees, allowing them more discretion to adapt the menu to local tastes.

Still, menu complexity may raise food and prep costs, slow service and confuse customers. Shake Shack offers five burgers and four hot-dog choices; McDonald’s already has 16 burgers plus 13 McChicken sandwiches. That goes up to 46 total when you count wraps, the McRib and the Filet-O-Fish. You want fries with that, or a fountain drink? Oh, what size?

Says McDonald’s spokesperson Becca Hary: “Millennials, families and our customers share a desire for quality ingredients and freshly prepared menu items. We remain focused on listening to our customers and evolving our menu to meet their expectations and changing eating habits.”

Taste Test

WITH A CORPORATE CARD AND A DOCTOR’S note in hand, this millennial went out to sample some of the standard bearers in the modern burger game. What works? I ate LaFrieda’s vaunted Black Label Burger at Minetta Tavern, a \$28 dry-aged offering served with caramelized onions as its lone default topping. Each bite first tasted of buttery, rare beef. Then came the mineral-tinged tang of aged steak. The bun and even the onions hardly registered—a competent supporting cast. I wolfed the burger down, pausing periodically just to marvel at it.

Two blocks away was a McDonald’s. I washed down the Black Label Burger with two bites of a \$4.78 (with tax) Big Mac. The beef tasted only like brown. Better were Wendy’s and Five Guys, whose offerings were greasy but otherwise commendable. Wendy’s pretzel bacon cheeseburger had colorful baby lettuce; the bun showed



Wendy's

1969, Columbus, Ohio

SIGNATURE BURGER:

Dave's Hot 'N Juicy ¼-lb. single

(Calories: 580; fat: 31 g; carbs: 42 g; sodium: 1,220 mg)

SELLING POINT: Wendy's likes to talk about the fresh, never-frozen beef in its burgers and the various upscale offerings on its menu—blue cheese and brioche; pretzel bun and bacon. *Consumer Reports* taste tests, though, placed it in the bottom half.



Smashburger

2007, Denver

SIGNATURE BURGER:

Classic Small Smash

(Calories: 610; fat: 40 g; carbs: 44 g; sodium: 1,760 mg)

SELLING POINT: The burgers are packed loosely and then “smashed” on a grill. Its founder says they cook more quickly and self-season thanks to their texture. But that tasty seasoning comes with a nutritional downside: Smashburgers have more sodium than other chains’.

some effort. Five Guys had the density of pie; I never forgot I was eating a treat. Three-quarters of the way through the burger, I was full.

Back in New Haven, Louis’ Lunch stays busy with a mix of students, locals and travelers intrigued by TV specials. Inside, the restaurant looks and smells like a fireplace, all iron and wood. A cashier and a cook work side by side in a narrow galley kitchen. The burger is a thick patty, cooked in a vertical broiler manufactured in 1898, served on toasted white bread and presented on a six-inch paper plate with napkins on top. Ketchup and mustard are prohibited. As for taste, there’s no onslaught of fat, no special sauce, no brioche bun. It tastes like nothing more than hot beef on bread.

Shake Shack, 274 paces and more than 100 years down the street, seems to do brisk business too, with a more diverse crowd. The interior is full of natural light, sturdy, well-sanded wood and games (shuffleboard!). I’m handed a pager for when my food is ready. My table tells me it was “handcrafted” in Brooklyn; the wood used to be part of a bowling lane.

This is the apotheosis of the better-burger experience, a consumer product ready-made for a generation that ditched all of its circa-2000 demands of Big Burger except the one for better flavor.

Millennials like stories about their food. Here’s one: The Shack and its peers have fashioned the burger into an even greater indulgence than it once was. New burgers may taste better, but they’re just as unhealthy. A Shackburger and fries will set you back about 1,000 calories, just like a McDonald’s Quarter Pounder with fries. Then there are the economic and social consequences. American beef consumption is increasingly blamed for hastening climate change, and fast-food workers recently protested for the right to organize and a \$15 hourly minimum wage.

The Shackburger is too fatty for my liking, with its mayo-centric sauce commingling unpleasantly with the cheese and fat drippings. It nonetheless comes on a potato bun sweeter than the norm. It tastes like a treat, yes, but one too rich and too sugary for me to ever earn it. Halfway in, I’ve had my fill of this particular experiment. I quit and head toward home. —WITH REPORTING BY BILL SAPORITO/NEW YORK



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WORLD

The Men Who Would Be King

The ties that bind Prince Charles and his sons

BY CATHERINE MAYER

IN APRIL 2013 BRITAIN'S PRINCE WILLIAM and his wife Kate, known since their marriage as the Duke and Duchess of Cambridge, attended the opening of the Tamar Manoukian Outdoor Residential Centre on the Dumfries House estate in Scotland. The project, named for a member of the prominent Armenian family that funded it, is one of a number of initiatives that William's father, Prince Charles, has founded to encourage youth leadership in Britain. As Charles cleared his throat to begin his speech, William spoke to the heir to the throne in a way few people can get away with. "Make it brief," he said.

He spoke in jest, but the light moment reveals much about the journey Charles and his family have undertaken since the painful end of Charles and Diana's marriage and her subsequent death in a car accident in Paris in 1997. Such events could have created chasms of resentment between a father and his children, but Charles and his sons display a closeness and loyalty to one another that is cemented both by a traditional sense of duty and the deep, complicated love that keeps together many modern families. William and his brother Prince Harry have grown up the subjects of permanent fascination—to be royal is to be a celebrity for life—but their appeal lies in the sense that they have experienced great sadness and privilege and have emerged as respectful young men who see their father not as a source of blame but as an ally.

William tends to be as clipped as his father is expansive. Still, he has given a few interviews in which his emotions broke through, answering questions about Diana and once visibly choking up as he watched footage of a rhino injured by poachers bleeding to death. The segment was filmed soon after his son George's birth in 2013, for a documentary aimed at raising awareness of the plight of endangered wildlife. "The last few weeks for me have been a very different emotional experience—something I never thought I would feel for myself," said the new father. "I find, even though it's only been a short period, that a lot of things affect me now—when I see a clip like that, there's so much emotion and so much feeling wrapped up into conservation and environment. It's just so powerful."

For the most part, William reveals little to journalists, radiating a contempt at least as heartfelt as his concern for rhinos. The reporters who regularly cover the royals

Mucking about by Loch Muick Charles and his sons relax on the lawn of Glas-allt Shiel, a royal lodge by the shores of a lake on the Balmoral estate in Scotland, in 1993

LESLEY DONALD—SYGMA/CORBIS

assume this is because William blames the press for Diana's death—several photographers on motorcycles were pursuing her when the car she was in crashed—forgetting that he surely remembers enough of his boyhood to blame the press for what it did to her life. Yet William's terseness is also a function of a process Charles went through. In defining himself against his staunch, silent parents, Charles became the man he is. In defining himself against his father, William has become more like his royal grandmother, closed and cautious, comfortable with actions rather than words.

William has also become his own man. Until recently, royal advisers clung to a vision of transition that would see Charles pass his charitable empire to his sons when he assumed the Crown. The Prince's Trust, founded by Charles in 1976 to improve the lives of disadvantaged youth in the U.K., would simply move its apostrophe one space to the right. "It would be nice to see the continuum," says an insider. But neither of "the boys," as the 30-something William and Harry are known among palace staff, shows an inclination to get involved with the trust or take on the rest of the sprawl. They dutifully turn up for trust events, and joined Charles at a February 2014 conservation conference, but are otherwise focused on their own careers and establishing their own organizations. William and Harry set up a new foundation in 2009 and were joined in their endeavors by Kate after her marriage to William. The young royals' charitable vehicle focuses on opportunities for young people, the welfare of veterans and serving members of the British military, and the conservation of natural resources; Harry also co-founded the Lesotho-based children's charity Sentebale.

They are demonstrating their independence in other ways too. This spring, William is set to embark on an experiment that will see the second in line to the throne trying to hold down a civilian job, as an air ambulance pilot, albeit with flexibility in his schedule so that he can continue to carry out royal duties. He plans to donate his full salary (\$61,000) to charity, illustrating the larger anomaly of a royal seeking a slice of normal life. Kate, meanwhile, has started flying solo in her own way, representing the Queen. She was supposed to undertake her first overseas engagement without William in September

2014, a trip to Malta, but William stood in for her after severe morning sickness temporarily clipped her wings. (The couple are expecting their second child in April.)

Royal Flush

IN SEPTEMBER HARRY CELEBRATED HIS 30th birthday in the afterglow of the Invictus Games, a competition for injured service personnel from 13 nations that he staged at London's former Olympic Park. Media coverage was benign. The British tabloids like *Harry*—for now. "He's the *Sun* readers' favorite royal," says the paper's royal photographer Arthur Edwards. "They think he's like them, and that's the highest compliment." Yet the event's success doesn't solve Harry's existential conundrum any more than his popularity will shield him against a future narrative of redundancy, as one of the spares, not the heir. Nor has Harry yet solved the problem of how to find a partner who is grounded and sane, yet not so sane that the prospect of life on Planet Windsor sends her in retreat. It took William almost a decade and a public rupture with Kate before he felt secure in making the decision to marry. It took Charles far longer to find contentment. Diana never did.

That history still shapes her sons' decisions. "William seems to have chosen to live up in Norfolk [as his country retreat], and yet his father has spent so long building [Highgrove] that I'm sure he would love one of his sons to inherit. It's a father's expression of immortality," says an insider. Highgrove, in southwestern England, was one of the family residences of Charles and Diana and remains a favorite retreat for Charles, who has lavished attention on its gardens for over 30 years and potters there happily, sometimes under the affectionate gaze of his second wife, Camilla. William and Kate's home, Anmer Hall, lies

more than 200 miles (320 km) away, to the northeast. Highgrove "embraces [Charles'] commitment to sustainable farming and to the world of the botanical, the natural world," the insider says.

The house also carries echoes of a difficult past. This is where the boys spent some of their best times and the most confusing. Charles was ill-equipped to cope with his first marriage, its collapse and the challenge of parenting children whose resentment at his rejection of their mother was layered with grief and anger at her death. Yet he made a miraculously good job of the last of these. At Diana's funeral, her brother delivered a eulogy that included a barely disguised swipe at royal parenting. "I pledge that we, your blood family, will do all we can to continue the imaginative way in which you were steering these two exceptional young men so that their souls are not simply immersed by duty and tradition but can sing openly as you planned," said Earl Spencer. One of the prince's biographers, Anthony Holden, judged that Diana's influence had already been erased when, less than three months after her death, Harry stood alongside his father at a charity concert in South Africa attended by Nelson Mandela and featuring the Spice Girls. In balmy temperatures, listening to pop, Harry, age 13, wore a suit and tie.

There is no question that Charles raised his sons to an awareness of duty and tradition—and an appreciation for a well-cut suit, though the boys tend to prefer single-to double-breasted—but he nurtured them too. He has always been keen to give them, in place of the tough love favored by his own parents, something more enveloping; he determined with Diana that they should be as protected from the public gaze as possible and spend as much time with their parents as possible, and when the time came they would not attend Gordonstoun—a Scottish boarding school that in Charles' time might have been judged spartan even by Spartans—but the cosier Eton College, on the doorstep of Windsor, one of the Queen's homes. He resisted the temptation to denigrate Diana while she lived and afterward encouraged the boys to think and talk about her and maintain contact with her friends. The relationships between father and sons are not without stresses and complexities, but they are stronger as a result. Unsurprisingly, these bonds are most easily visible in a shared sense of humor, says

William plans to donate his full salary to charity, illustrating the larger anomaly of a royal seeking a slice of normal life



Shoulder to shoulder From left: William, Charles and Harry, shown at the 2014 Invictus Games, share Windsor genes and funny bones

Camilla's nephew Ben Elliot, "them ridiculing him, him ridiculing them, that joshing that often goes with good relationships. Not just about a lack of hair or those kinds of things. I've seen with his younger son them almost just frolicking with one another in a really lovely way." Actress Emma Thompson, an old friend of Charles, agrees. "They are so, so loving," she says.

When he married and started a family, William shifted the dynamic, presenting the idealized family unit that used to be monarchy's specialty. Yet in appearing to secure the future of the Windsor dynasty—a future King happily married to his future Queen and already blessed with an heir, unblemished by scandals, unburdened by failures—the Cambridges have attained a popularity that threatens to undermine the first in line to the throne. "People admire the Queen so much because she's impeccable—she shows no emotion—and they also say Prince William is a modern royal, but somehow Prince Charles is in the middle and gets criticized from both sides," says Patrick Holden, founder of the Sustainable Food Trust and a longtime adviser to the prince on sustainability issues.

Happy and Harmonious

PATRICK HOLDEN SAYS THE MEDIA NARRATIVE of princely jealousies is overdone. He has heard Charles comment ruefully on his sons' and daughter-in-law's ability to draw crowds and headlines but has witnessed far more often the prince's boundless pride in the younger generation. He is always learning from his children, the prince remarks during predinner conversation at Dumfries House. He is constantly amazed by what they know about the world—and what he doesn't. In return, he has tried to do as the Queen Mother did for him, introducing them to art and culture, or at any rate those corners of art and culture that resonate with him. (Charles' 2010 book *Harmony* sets out a philosophy that will never tolerate anything that smacks of modernism.)

The birth of Prince George has drawn a close family closer. The boys not only accept Camilla but are affectionate toward her, seeing how much she lifts their father's spirits. Diana has not been forgotten, but she no longer divides and conquers. "His Royal Highness said something in connection with his grandson the

other day, which I thought was incredibly revealing, about how the most important thing is to have a heart that's open," says Patrick Holden.

Hearts are open. Harmony reigns. The question remains: Will Charles, William and, eventually, George? Part of the answer lies beyond royal control, in social and economic developments that could either enhance the residual value of the monarchy or shred it. But a larger responsibility for their fate lies with the royals themselves. The Queen has kept the throne safe, if not warm. Should her son live long enough to succeed her, he is unlikely to have time to secure his legacy through the kind of slow, careful change management that served her so well. Charles' greatest challenge will be to stand for continuity while redefining the monarchy, remaking it in his own image while strengthening it for his son and grandson. ■

This is an edited extract from Born to Be King: Prince Charles on Planet Windsor, by TIME editor at large Catherine Mayer, to be published by Henry Holt on Feb. 17. Copyright © 2015 by Catherine Mayer.





LIVING LONGER

THE NEW AGE OF MUCH OLDER AGE

EVERYONE WANTS TO LIVE LONGER, AND SCIENCE IS
STARTING TO MAKE THAT HAPPEN. BUT LIVING BETTER
WILL BE THE REAL CHALLENGE—AND OPPORTUNITY

BY LAURA L. CARSTENSEN

WE LIVE IN EXTRAORDINARY TIMES. AND THANKS TO medical and scientific advances that even a generation ago would have sounded like science fiction, our lives are getting longer. An American born today has a projected average lifespan 20 full years longer than one born in 1925, and we are, as a society, growing old. For the first time in U.S. history, the number of people over 60 exceeds those under age 15.

Long life is a remarkable achievement. But our aging society presents challenges every bit as fundamental and pervasive as climate change and globalization. If we address the reality of longevity, we will avoid a crisis—and improve the quality of our lives at all ages.

Even as we look forward to more years ahead, the idea of a long life can also trigger anxiety. The unease we experience has to do with how quickly the age structure in the global population has been reshaped. In less than a century, more years were added to life expectancy than all years added across all prior millennia of evolution combined. Long-lived societies appeared so suddenly that culture—the crucible that holds science and technology along with wide-scale behavioral practices and social norms—has not caught up.

The challenge we face today is converting a world built quite literally by and for the young into a world that supports and engages populations that live to 100

years and beyond. This is no small feat. Consider, for example, that parks, transportation systems, staircases and even hospitals presume that users have both strength and stamina; suburbs across the country are built for two parents and their young children, not single people, multiple generations or elderly people who may be unable to drive. Our education system serves the needs of children and young adults and offers little more than recreation for experienced people.

Indeed, the very conception of work as a full-time endeavor ending in the early 60s is ill suited to long lives. Arguably most troubling is that we fret about ways that older people lack the qualities of younger people rather than exploit a growing new resource right before our eyes: citizens who have deep expertise, emotional balance and the motivation to make a difference.

Science and technology are the reasons for the increase in life expectancy, and looking forward, science and medicine will be responsible for how we extend life even further. But to get a handle on where we're going—the potential for a life longer than any of us can imagine—it helps to think about how we got here.

Prize-winning economist Robert Fogel and his colleague Dora Costa describe a phenomenon called “technophysio-evolution,” that is, biological changes due largely to technologies that ensured a steady food supply. But this explosion wasn't limited to agriculture. Electricity was discovered and made widely available; refrigeration improved the safety of food; pasteurization and water purification contributed further to health; the systematic disposal of waste greatly reduced the spread of contagious disease; and medical science led to dramatic reductions in premature death thanks to vaccination programs that effectively wiped out lethal viruses from large parts of the developed world.

Although we were and remain little different genetically from our ancestors 10,000 years ago, the working capacity of our vital organs has improved greatly. Average body size has increased. We have grown taller, and our brains have come to process information faster.

Longer lives and the fact that we're having fewer kids, in combination, began a global process by which population pyramids—with many at the bottom and a tiny proportion of old people at the top—are being transformed into rectangles. If you're the type of person who can get chills from population statistics, these are the numbers for you. What they mean is that for the first time in history, the majority of babies born in the developed world have the opportunity to grow old.

As much as we may fancy ourselves freethinking, the crux of the longevity challenge is, quite frankly, that humans are creatures of culture. The culture that guides us today—that tells us when to get an education, marry, have children, buy a house, work and retire—is profoundly mismatched to the length of the lives we are

living. Today's culture offers little in the way of cures or even treatments for the chronic diseases that afflict older people, nor does it offer guidance about how to finance decades-long retirements. And so individuals worry they will succumb to dementia, run out of money, lose their relevance. But it needn't be so. Instead of hand-wringing about productivity falling and infirmity rising, we need to change the course, both biologically and socially, of long life.

With sufficient financial support, the potential of scientific advances is breathtaking. Biologists are beginning to understand, at a molecular level, the processes by which aging increases the risk of a whole range of diseases and, importantly, how to slow and even reverse some of these processes. The very nature of chronic, degenerative diseases is being revealed, which paves the way for therapies and possibly even cures that were scarcely imagined a generation ago.

Meanwhile, technological advances have made available devices that can compensate for a wide range of age-related problems, such as difficulties with hearing, balance and mobility, just as eyeglasses rendered presbyopia no more than a minor inconvenience more than a century ago. And with an investment in social science we can develop methods that help people better envision and plan for their futures, improve fitness, remain cognitively sharp and, in some cases, reverse diseases rooted in lifestyles.

We can apply science so that the youngest children among us today live happy and healthy lives as centenarians. In partnerships with businesses and industries, products can be developed that help people age well. Examples include cars that brake before impact, smart homes that improve the safety of occupants, mobile devices that influence behavior and financial products that allow people to effectively finance long lives.

We might also trade retirement for new models of working longer, so that parents spend more time with young children, sabbaticals become commonplace and—imagine this—workers experience periods of leisure before they reach old age.

An essential first step is to change the way we think about our suddenly longer lives.

Thirty or more extra years of life also means we can improve the way we live. To the extent that we can build a world where people arrive at old age mentally sharp, physically fit and financially secure, the problems of individual aging will recede. And finally, we can change the ongoing conversation about a crisis on the horizon to one about long life and new opportunities. ■

Carstensen, professor of psychology and director of the Stanford Center on Longevity, is the author of A Long Bright Future: Happiness, Health and Financial Security in an Age of Increased Longevity

LONGEVITY GURU:



Laura L. Carstensen,
director of the
Stanford Center
on Longevity
Age: 61

AGING INTERVENTION

“Oddly enough, I don't think much about chronological age. I do think a lot about physical and psychological health. I keep my priorities clear. Exercise and persistently trying to solve big problems is what keeps people sharp and makes life satisfying.”



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LIVING LONGER | SCIENCE

AGE DISRUPTERS

A DRUG FROM DIRT AND SOME SIAMESE
MICE HAVE RESEARCHERS INCHING
TOWARD THE SEEMINGLY IMPOSSIBLE:
A CURE FOR AGING

BY ALICE PARK

IF THERE WERE GUINNESS WORLD RECORDS DEDICATED to high-achieving rodents, Mouse UT2598 would deserve a mention. The average life span for a mouse is 2.3 years—so at age 3 and still going strong, Mouse UT2598 has a shot at beating the record for longest-lived, which stands at about 4. Translating that to a human life span, he's hovering around the centennial mark, but on the outside, he looks no different from his much younger brethren. His fur is glossy black, he's lean, and while he's a bit on the small side, he's scrappy and surprisingly active as he explores, sniffs and pokes around his cage at the University of Texas Health Science Center at San Antonio.

What gives Mouse UT2598 his edge is a compound called rapamycin, which seems to slow aging and the damage it can do, at least to certain cells. His liver and heart function as if they were far younger, and his tendons have more spring and flexibility than they should at his age. There's also less evidence of tumors in his organs than is considered normal, so he could be spared the effects of cancer for quite a while longer. Place him alongside other mice his age, and the contrast is unmistakable.

The experiments involving Mouse UT2598 and rapamycin are just one example of the kind of research into aging that's producing new findings—and raising new questions—every day. In labs around the world, researchers are testing all sorts of agents, some of which already exist as drugs to treat human conditions (rapamycin is given to transplant patients to prevent organ rejection

Photograph by Evan Kafka for TIME

after surgery) and some of which are purely experimental. Scientists are also toying with ways to manipulate genes and pull out aging cells, all in a race to find a way to extend longevity to its outer limits.

These efforts mark a new push to examine the basic mechanisms of aging and find ways to counteract—or “cure”—them. And they are anything but fringe. Longevity research is being conducted by respected scientists with sound reasons for staking their careers on the hubristic notion that it’s possible to slow down aging and maybe even reverse it.

“When I got into the field, the notion that you could actually do something about the aging process was viewed as a crackpot idea,” says Richard Miller, director of the Glenn Center for the Biology of Aging at the University of Michigan. “The argument that one can slow aging, and diseases of aging along with it, used to be fantasy, but now we see it like a scientific strategy.”

Nobody is talking about living forever. But as these experts see it, aging is the single most powerful factor in the diseases that are most likely to cut our lives short: cancer, heart problems, immune disorders and degenerative brain conditions like Alzheimer’s. “Everybody knows that the main risk factors for heart disease are high cholesterol, obesity and high blood pressure,” says Dr. Felipe Sierra, director of the division of aging biology at the National Institute on Aging (NIA). “But even stronger than those factors is just being 70 years old.”

And that’s why staving off aging—or at least slowing it—has become such a central focus of research. “We’re going at aging itself,” says David Sinclair, a geneticist at Harvard Medical School. “We might take someone who is showing signs of aging and be able to

do something about it, to treat that as a disease. That’s something I didn’t expect to be seeing in my lifetime.”

LONGEVITY GURU:



David Sinclair,
geneticist
at Harvard
Medical School
Age: 45

AGING INTERVENTION:

“I take resveratrol, alpha lipoic acid and fish oil, exercise to exhaustion once a week and skip dessert. I haven’t gained more than a few pounds in 30 years. I live every day like it’s my last and did more than I expected to in two lifetimes.”

A Modern Antiaging Elixir

MOUSE UT2598’S LONGEVITY DIET LACED WITH RAPAMYCIN traces its existence back to some dirt samples collected in 1964 on an expedition to Easter Island. Those soil samples became the basis for developing a new antibiotic, which was named rapamycin. Researchers noticed that mice that were given the drug tended to live longer—by about 20%, compared with those that weren’t taking it.

“Rapamycin is neat because it works in a wide variety of species, from yeast, worms and flies to mice,” says David Harrison, who is studying the compound at the Jackson Laboratory, where scientists mine the genome for solutions to human diseases. He and Miller, along with Randy Strong—in whose lab Mouse UT2598 resides—are also testing other agents in a program sponsored by the NIA. “Rapamycin is also neat because it works even when you start quite late in life.”

Because of a delay in formulating rapamycin so it remained stable in mouse chow, the first animals to try it were already getting gray—they were 20 months old, or the equivalent of 60 years in people—but they still showed slower aging once they took the compound. If the research eventually leads to a human treatment, that could bode well for older people; they could potentially enjoy the same benefits that this lucky mouse is experiencing, even if they start in their 60s or 70s.

It turns out that rapamycin interrupts the function of a gene called mTOR, found in both mouse and man, which acts as a traffic signal for directing how cells take in and use energy. If there’s plenty to eat, the

PUSHING THE LIMITS OF LONGEVITY

1925

Turn-of-the-century health regulations, requiring improvements such as clean water and better sewage disposal, curb outbreaks in the U.S. that are particularly deadly to children.



1955

Thanks to vaccines for smallpox, diphtheria, polio and other highly contagious—and often lethal—viruses, average life expectancy goes up.



1985

Public-health campaigns on heart health and the dangers of smoking reduce heart-disease deaths. Medical advances also help extend life.



gene is busy greenlighting cells to absorb nutrients and grow, grow, grow. When food gets scarce, the gene goes quiet, halting the cell-growing machinery until the next feeding time. While mTOR may explain, in part, the phenomenon of calorie restriction and its ability to prolong life—in the 1930s, studies in mice showed that cutting back on their daily diet could add nearly a year to their lives—there's also evidence that it taps into other energy-related pathways to longer life as well.

The more active state—the one in which cells are processing nutrients and growing—turns out to age cells considerably: as our cells are working hard to process our food, they also spew out toxic free radicals. The goal, then, is to keep mTOR as subdued as possible, preferably without requiring animals to starve themselves miserable. And that's what rapamycin appears to do.

So far it's the most promising compound under study, and Harrison and his colleagues are optimistic, though cautious, about its future. After all, resveratrol, a compound found in grapes and red wine, showed early promise in mice that gorged on high-fat diets, extending their lives, but it wasn't as impressive in helping animals on normal diets live longer. (Researchers aren't ready to give up on it yet, however, and it's still being studied at GlaxoSmithKline.)

While rapamycin dials up one antiaging circuit, it's clear that it is not yet a fountain of youth. "I'm 72, but I'm not popping rapamycin pills yet," says Harrison. Consider the downsides. In mice, it has resulted in a body size that is about 30% smaller than average, and mTOR-regulated mice were also more likely to develop cataracts and were more prone to diabetes. The males tend to experience gradual loss of testicular function—not



20%

How much longer mice live when they eat chow spiked with rapamycin, compared with mice who nosh on normal chow



exactly a selling point for a future longevity treatment.

Human patients who took the drug after kidney transplants to lower their chances of rejecting the organ, for instance, also had slightly higher chances of developing diabetes, and the risk of cataracts requires more study before a broad application of the drug would be possible. Still, given the fact that rapamycin is already approved and safely taken by patients, antiaging researchers are hopeful that they'll be able to arrive at the right doses to tip the balance in favor of longevity while minimizing potential risks.

Find the Switches to Flip

FOR OTHER RESEARCHERS, THE KEY TO LONGEVITY MAY be in our genes. Telomeres are the timekeepers of a cell's life; each time a cell divides, it copies its chromosomes' DNA, and like a knot tied at the end of a thread, telomeres signal the end of the copying process. With each cell division, these little squiggles, which are the final segments of DNA at the ends of chromosomes, shorten—eventually disappearing altogether. And because certain things like exposure to UV light can cause telomeres to shorten at different rates, they're a target of lots of new antiaging research too. (For more on how telomeres are being studied, see page 80.)

In healthy people there is a balancing dance between the shortening of telomeres and the work of an enzyme called telomerase, which lengthens them just a little bit, to restore some of the DNA that's lost. But that doesn't happen in people with telomere-syndrome conditions—which includes some bone problems, liver failure and immune-system disorders. It's what makes those terrible conditions research gold for antiaging scientists.



2015

Improved drugs, diagnostic tests, surgeries, disease treatments and other medical advances reduce fatality rates for cancers and other illnesses.



2045

Regenerative medicine may interrupt aging. If not, conservative estimates put life expectancy at 81 as high obesity rates offset other gains.



If they can figure out how to correct the misbehaving telomeres in those people, they may be able to correct them in normally—but inexorably—aging people too.

Twelve years ago, Dr. Mary Armanios met her first patient with such a condition while she was training with Carol Greider, a scientist who shared a Nobel Prize for the discovery of the enzyme telomerase. Through their lab at Johns Hopkins School of Medicine, Armanios met a college student with a blood disorder that required regular transfusions. He was in his 20s but had a shock of gray hair that had first appeared when he was 9. This alone was unusual, but his family history also intrigued her. Almost all his relatives on his father's side died young. His paternal grandmother, who had severe osteoporosis and bone disorders, died in her 60s. His father died at 59 while waiting for a liver transplant. His aunt and uncle died of pneumonia in their 60s. The young man, too, had been in and out of hospitals most of his childhood to treat infections. He eventually died, at age 31, of a stapl infection.

"The cosmetic symptom was hair graying, but they all have a form of hair graying in other organs as well," says Armanios. It turned out that the family members all had dyskeratosis congenita, a rare condition with an extreme form of telomere dysfunction.

Armanios is confident she might learn something about how telomeres are supposed to work—and even how they might be manipulated and extended to halt aging-related problems, not just in those with dyskeratosis congenita but in healthy older populations as well.

One strategy may involve dousing cells with the right genetic ingredients to lengthen telomeres, as Helen Blau and her colleagues have done in petri dishes at Stanford University. "We turned back the clock on the cells by the equivalent of many years in human life," Blau says.

Even more encouraging, the cells didn't continue to divide indefinitely, which might raise concerns about uncontrolled growth, as occurs in cancer. "They start to [deteriorate] normally, and that bodes well for safety," she says. Eventually, Blau hopes the cells will be tested in the liver or lungs of patients with dyskeratosis congenita, where they can target the rapidly aging cells. If that is successful, the same techniques might turn back the clock on aging cells in the rest of us.

So Simple and So Strange

BUT THERE MIGHT EVEN BE A QUICKER—IF ODDER—WAY to defy aging that literally exploits the power of young blood. Relying on an innovative technique in which young and old mice can be conjoined, Siamese twin-style, to share the same blood system while keeping everything else separate, Amy Wagers at the Harvard Stem Cell Institute found something in the blood of younger mice that seems to rejuvenate an aging animal. The older mice that were yoked to the younger ones showed more new nerve-

cell growth in their brains, their muscles were stronger, and in one study, some of the enlarging of the heart that comes with aging was reversed. "Their tissues are functioning more like younger tissues," she says.

What appears to be one of the secret ingredients here is GDI1, a protein that's abundant in young animals' blood but is scarcer in older ones. Wagers is conducting more studies in both animals and people to see if longer-lived people have higher levels of GDI1 or whether people with low GDI1 might be more vulnerable to age-related diseases such as heart problems, cognitive decline and muscle atrophy.

And GDI1 isn't alone in showing such promise. At the University of California, San Francisco, neurobiologist Dena Dubal is investigating a hormone called klotho, named after the Greek fate responsible for spinning the thread of life for mortals. Increasing the klotho levels in mice helps animals live 30% longer, and 1 in 5 people also carries a version of the klotho gene that boosts its amounts. On average, those individuals live an extra three to four years. It's not the hormone of immortality, but it's a start.

Manipulating klotho, GDI1, telomeres or any of the longevity genes could involve some invasive and high-tech interventions, including gene therapy and even cell transplants. But what if all those efforts are overthinking the solution, and it's possible to put the brakes on aging by simply removing aging cells, like plucking out gray hairs? That's what Dr. Jan Van Deuren and his team are pursuing at the Mayo Clinic. By seeking and pulling out dying cells in the muscle, fat and eyes of mice, he's helping them live longer than control animals. "We're getting rid of a cell type you don't have when you're born, something that accumulates over time that may not really be needed for survival," he says.

He is the first to admit that there is still plenty about that strategy—as well as other promising aging interrupters—that scientists don't understand. For example, are rapamycin-fed mice living longer because their cells are actually functioning like younger ones or because they're simply delaying aging conditions like cancer and heart disease? Are the old mice infused with young blood truly young again, or are their rejuvenated cells only temporarily acting more youthful? And while we know more every day about the roles telomeres play in the aging process, is the answer as simple as finding ways to safely lengthen them through drugs? They aren't easy questions to answer, but aging experts welcome them.

That's because what's happening in these labs is not just about extending a life indefinitely but rather extending a healthy life for a little bit longer. And researchers say they're truly optimistic that breakthroughs will come in their lifetime. After all, says Harrison, "It must not be all that complicated, or we wouldn't be having the success that we're having."

LONGEVITY GURU:



J. Craig Venter,
co-mapper of
the human
genome
Age: 68

AGING INTERVENTION:

"I do weight training at least three days a week to keep muscle mass up. Getting your genome sequenced will also be part of knowing the best way to stay healthier longer, but without the context of how it affects the way your body functions, it isn't helpful. In the next two to five years, we'll have more personalized information."

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STRETCH YOUR TIMELINE

BY MANDY OAKLANDER

AS SUDDEN AS AGING CAN feel, no one wakes up in a 90-year-old body without getting some warning signs first. But if you know what's coming, you can plan to give certain parts some extra care early on. Already in the throes of aging? (Trick question. We all are.) "You're never too old to do anything to help to maintain wellness of your body," says Dr. Ronan Factora, geriatric-medicine expert at Cleveland Clinic.



18

SKIN

From around 18, resilient collagen and stretchy elastin decline at about 1% per year. You can slow the process by not smoking, eating well and wearing titanium or zinc sunscreen every day—even if you're indoors. A 2012 study found that some compact fluorescent bulbs emit skin-damaging UV light.

30

LUNGS

Lung function begins dropping 1% a year at 30 and declines more in people who are sedentary than in those who are active, says Dr. Thomas Perls, geriatrician and principal investigator of the New England Centenarian Study at Boston Medical Center. The antidote: exercise.

35

BONES

Bone mass tends to go downhill at a rate of up to 1% per year after age 35 (and faster after menopause). Weight-bearing exercise makes a big difference in bone density. A 2015 study found that simply jumping 20 times twice a day significantly improved hip-bone mineral density.

40

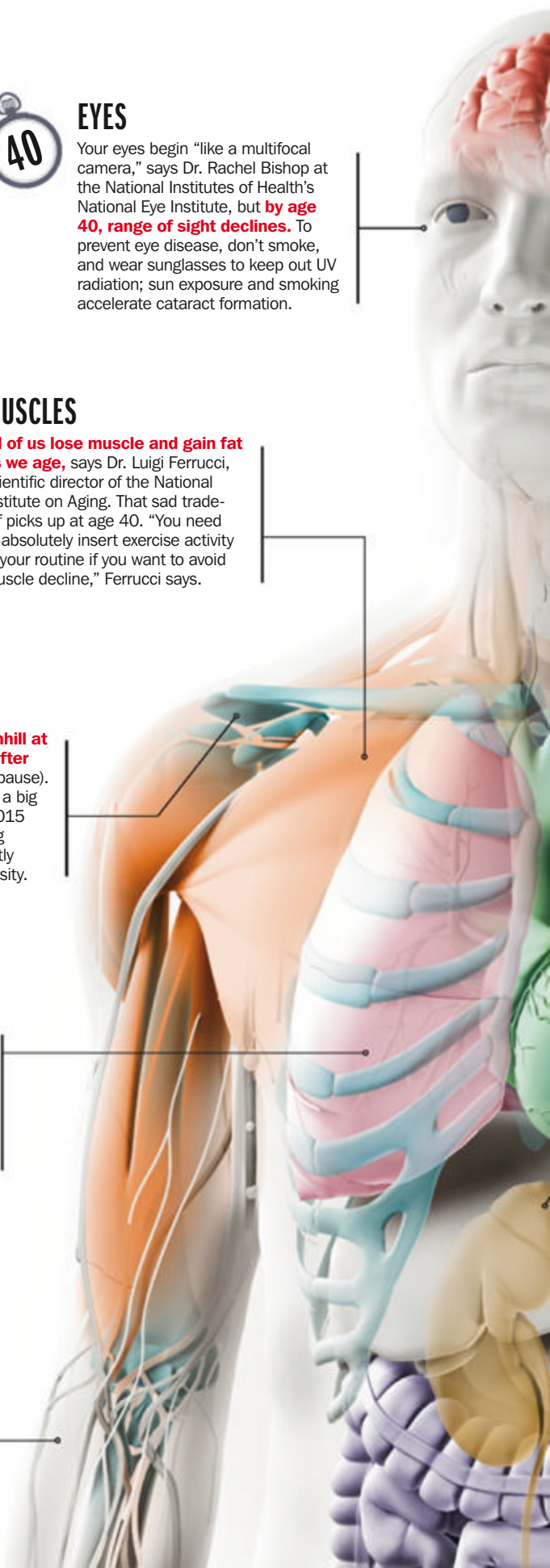
MUSCLES

All of us lose muscle and gain fat as we age, says Dr. Luigi Ferrucci, scientific director of the National Institute on Aging. That sad trade-off picks up at age 40. "You need to absolutely insert exercise activity in your routine if you want to avoid muscle decline," Ferrucci says.

40

EYES

Your eyes begin "like a multifocal camera," says Dr. Rachel Bishop at the National Institutes of Health's National Eye Institute, but **by age 40, range of sight declines.** To prevent eye disease, don't smoke, and wear sunglasses to keep out UV radiation; sun exposure and smoking accelerate cataract formation.



70

BRAIN

You don't lose your mind all at once—but **by 70 you'll start to see age-related brain changes speed up**, says George Rebok, a cognitive-aging researcher at Johns Hopkins Bloomberg School of Public Health. Stick with activities that engage and stimulate you, he says.

60

EARS

Age-induced hearing loss happens gradually, but 1 in 3 people ages 65 to 74 has it. There's not much you can do to slow it, but listening to or playing lots of loud music or working in noisy industries like construction will hasten it, says Boston Medical Center's Perls.

65

HEART

As you age, your heart-muscle cells shrink in number but expand in size, which makes your heart wall thicker. Your arteries tend to get stiffer too. Starting at age 20 to 30, peak aerobic capacity drops by about 10% per decade, and **heart disease typically kicks in around age 65.**

50

KIDNEYS

You won't necessarily feel it, but decline in kidney function starts around 50. The best thing to do is drink plenty of water. Since thirst decreases with age, you may have to remind yourself. One study found people who drank the most fluids were less inclined to kidney decline.

60

GUT

The hairs on your head aren't the only strands to go. **Villi in your intestine—tiny hairlike projections that absorb the nutrients in food—tend to flatten out around age 60**, says Cleveland Clinic's Factora, and the loss means you'll absorb fewer nutrients.



GET YOUR HEAD IN THE GAME

CUTTING-EDGE RESEARCH IS SHOWING THAT YOUR OUTLOOK CAN CHANGE HOW YOU AGE—AT THE CELLULAR LEVEL. HERE'S HOW

BY JEFFREY KLUGER

WE TEND TO FACE AGING WITH FEEL-GOOD SLOGANS, bringing platitudes to a knife fight. “I’m 70 years young!” we say, ignoring the fact that, going by average U.S. life expectancy, it won’t be long before we’re 78 years dead. “Fifty is the new 40,” we tell ourselves, when the mathematical reality is no, it’s not. Fifty will never even be the new 49½.

Then comes a bit of wisdom that, if anything, seems like the most shopworn of all: “You’re only as old as you feel.” As sentiments go, it has the twin flaws of being both banal and blaming—as if feeling old is your own fault. It turns out, however, that whoever coined that one may have been onto something big.

It’s no secret anymore that the familiar mind-body divide, with your head home to the abstract and ethereal and your flesh home to the messy and mechanical, is nonsense. Your moods, feelings and thoughts all influence your physiology. Learn to relax and your blood pressure goes down; emerge from depression and your immune system picks up; take a pharmacologically useless sugar pill that you’re told is a powerful drug for your headache or backache or infection and as if by magic, you get better.

The tantalizing question, then, has always been this: If the mind can heal the body, can it also rejuvenate it? Can it make it physically, measurably younger or, at the very least, slow the aging process? The people who research such things already accept that the way we

think and feel can increase the population of disease-fighting white blood cells and lower the level of the hormone that raises blood pressure, so why couldn't it help recalcify bones or reverse heart disease or preserve the brain cells that are lost with age? "You're only as old as you feel" may merely be part of the equation. Perhaps, within reason, you're only as old as you bloody well choose to be—because research is mounting that your outlook, your personality and, frankly, how upbeat you are have a profound impact not just on how you feel but also on how your cells age.

"Let's treat *mind* and *body* as just words," says Ellen Langer, a professor of psychology at Harvard University who has been studying aging, mindfulness, decision-making and health since the late 1970s. "Let's put them together as one thing and say anywhere you put the mind, you also put the body."

Once you make that leap, the medical tool kit becomes a lot larger. It includes not just pharmacology and surgery but also things like meditation, optimism, resilience and social connections—all the stuff that's always been far outside medicine's visible wavelength but suddenly is finding a place comfortably within it.

Consider one study, for instance, showing that even a single day of a mindfulness meditation practice can down-regulate a gene that codes for inflammation—one of the greatest drivers of aging. Or the one showing that reducing stress can reduce the cellular damage from the highly reactive oxygen atoms known as free radicals. Or the research that found, most remarkably, that the telomeres within your cells—the little cuffs that cap chromosomes and erode over your lifespan—can actually be made to grow longer, provided your mind is in the right state to make it happen.

"It comes down to daily behavior and the choices we make," says Elissa Epel, a professor of psychiatry at the University of California, San Francisco (UCSF), who studies stress and aging. "We have a growing set of studies of people from around the world showing that aging is not just an aspect of genetics but of how we live." Deciding to live better, it increasingly seems, is the same as deciding to live younger.

Winding Back the Mind

IT WASN'T UNTIL THE LATE 1970S THAT RESEARCHERS began seriously thinking about using the mind to arrest the aging process, and it was Langer's landmark "counterclockwise" study that really got things started. In 1979, when she was just beginning her Harvard teaching career, she recruited a group of eight men in their 70s for a five-day stay at a retreat in New Hampshire. The men were in neither good nor bad health but what was considered age-appropriate health—which is to say slow, bent and easily fatigued. But Langer was determined to change that.

LONGEVITY
GURU:



Ellen Langer,
professor of
psychology
at Harvard
University
Age: 67

AGING INTERVENTION:

"I don't get stressed about combatting age, which leads me to take care of myself naturally, without an agenda. I like to play tennis and take walks because it's fun to do so. When we nurture our minds, we're taking care of our bodies."

The retreat, as the men discovered when they arrived, was a former monastery designed to look as the world did to them in 1959. Vintage programs were showing on vintage TVs. Midcentury music played on midcentury radios. The men were treated too as they would have been back then—no one offered to help them with their bags or fetch them a blanket. They kept their conversation to the topics they would have discussed in 1959—the doings in the Eisenhower White House, say, or the Dodgers–White Sox Series face-off. And lest the men get a glimpse of themselves and break the spell, all mirrors were removed from the space.

At the beginning and end of the five-day span, Langer administered a series of physical and cognitive aptitude tests to the men, and the result was as she expected: on virtually every metric, their performance improved dramatically, and in many cases it was closer to what would be expected for men a decade or two younger.

"The study spoke volumes to the potential we have to change our health," Langer says. "At some point people just tell us we can't. If you're 20 and you hurt your wrist, you expect it to get better. When you're 70, you've bought into the mind-set that you're falling apart, and then you do."

Langer went on to test the same premise in other ways. After recruiting a sample group of hotel maids who were battling their weight, she told half the sample that studies showed the work they did every day was actually a vigorous form of calorie-burning exercise. The other women were given no such information. At the end of the study, the women who believed that their work was a workout lost more weight than those in the other group.

Langer's studies, compelling as they are, are not complete. They do a very good job of proving that thinking young appears to make the body young—or at least younger—but they don't say why. Langer herself is more philosophical than empirical on this. "The mechanism is the part that's so hard to get across to people," she says. "But when the mind and body are one, there's no mediator needed."

Maybe. But even if she doesn't need a mediator, other scientists do, and they're looking hard for it—starting inside human cells, at telomeres.

The Levers of Aging

OVER THE COURSE OF A LIFETIME, TELOMERES BURN down like a sort of candle wick, leaving the chromosomes vulnerable to damage and starting the aging process.

Investigators have understood the basics of telomeres since 1978, when then postdoctoral fellow Elizabeth Blackburn, now at UCSF, first mapped their structure and later, with her collaborator Jack Szostak of Harvard, their function. In 1984, Blackburn and her graduate student Carol Greider, now at Johns Hopkins

School of Medicine, discovered the enzyme telomerase, which repairs and maintains telomeres—at least when it's around at sufficient levels. When those levels fall, which happens as we get older, the aging process is kicked off. The discovery won all three of them the 2009 Nobel Prize for Medicine.

"When studies look at which individuals will die in the next three years," Blackburn says, "the chances are higher if your telomeres are shorter. Telomere shortening plays into cardiovascular disease, immune-system problems and maybe diabetes by affecting beta cells in the pancreas—though that one's been shown only in mouse models so far."

The question is, Are there ways to intervene to spare the telomeres and preserve your health? The answer—at least preliminarily—is yes, and stress reduction is one powerful method. In 2014, Epel and her colleague Eli Puterman, also of UCSF, studied 239 healthy, postmenopausal women over the course of a year. Many of the subjects were experiencing at least one of 13 major life stressors, which included unemployment in the family, financial woes, divorce and the illness of a child.

The length of their telomeres was measured at the beginning and end of the year, and the more life stressors these women experienced in that time, the more their telomeres shortened that year. But some of the women also practiced good health behaviors—they exercised, ate well and slept well. Consistently, the women who also practiced good health behaviors maintained their telomere length. "The question had always been whether the telomeres respond to daily lifestyle changes or if the system is chronic and proceeds at its own pace," Epel says. "In our study, it was lifestyle, with damage occurring mostly in people who were sedentary."

Worse, telomere-shortening stress is not confined to older people and does not even have to be experienced firsthand. Epel cites studies showing that when cord blood is drawn from newborns, the babies whose mothers had experienced more stress when they were pregnant showed shorter telomeres than those whose

mothers had easier pregnancies. "We replicated that original finding," she says, "and it suggests healthy telomere maintenance doesn't start when you're born but before you're born."

Some researchers believe that improvements in exercise and other healthy behaviors can increase the output of telomerase, and animal studies in test tubes show that increased telomerase may in turn make telomeres grow. Telomerase supplements, however—either synthetically produced or in the many herbal supplements that claim to include the enzyme—are not the answer. If telomeres never burn down, you get immortal cells—which is another way of saying cancer cells.

"Cancers love telomerase, and a number of cancers up-regulate it like crazy," says Blackburn. "But some cancers are also related to low telomerase because that makes telomeres less stable." Trying to boost telomerase through supplements is a very dangerous game to play—at least given the current state of medical knowledge. "We don't know how to strike some kind of balance. My feeling would be that if I take anything that would push my telomerase up, I'm playing with fire," says Blackburn.

Putting Out Fires

TELOMERES AREN'T THE ONLY BIG, STRESS-RELATED players in the aging game. Another is chronic inflammation. When you're anxious, the sympathetic nervous system—which is not known for thinking things through too clearly—assumes you're about to encounter a predator or some other life-threatening challenge. The brain thus sends a signal to the adrenal gland to start secreting the hormones epinephrine and cortisol; together, these hormones signal the immune system to release proteins known as inflammatory cytokines. These prepare white blood cells and other infection fighters to rush to the site of an anticipated wound.

That works quite well when there really is a wound, or when the danger is fleeting and you escape without injury. Either way, the system, thanks largely to cortisol, dials itself back down. But what if you're always braced for a battle of some kind—with your boss, your kids, your credit-card statements—and the body is always flooded with inflammatory chemicals? In those cases the body suffers from what's known as inflammation—and that's bad.

"There is no invader as there is with a wound, but we're reacting as if there is anyway," says Epel. "That creates a friendly environment for cancer, brain deterioration, cardiovascular disease." In other words, for many of the main killers of aging.

One of the best ways to battle this is with a settled psychic state, through meditation and mindfulness exercises. Increasingly, researchers are finding that a

'THE REGULAR PRACTICE OF [MEDITATION] SEEMS TO BE ABLE TO ALTER THE TRAJECTORY OF AGE-RELATED CHANGES.'

—RICHARD DAVIDSON, NEUROSCIENTIST AT UNIVERSITY OF WISCONSIN, MADISON

particular form of meditation known as Mindfulness Based Stress Reduction (MBSR)—which, as its name suggests, includes paying close attention to feelings, thoughts and other stimuli while meditating—can calm an inflamed immune system in the same way it can calm an inflamed mood.

In 2013, Richard Davidson, a neuroscientist and the founder of the Center for Investigating Healthy Minds at the University of Wisconsin at Madison, conducted a pair of studies showing just how powerful an effect MBSR can have on the body. In one, he and his colleagues compared 40 subjects—21 of whom engaged in eight hours of a combination of guided meditation, meditative walks and lectures on meditation, and 19 of whom engaged in equally relaxing activities but without the meditation. At the end of even so brief a period as eight hours, the meditators showed a decrease in the expression of the very genes that regulate inflammation—meaning a decrease in inflammation itself too.

Another study replicated the findings over the course of eight weeks, and at the end, the experimenters used a suction device to raise a small blister on the arms of the subjects. When fluid was withdrawn, the meditators showed significantly lower levels of inflammatory cytokines—the same cytokines that do so much damage when they circulate in the body chronically.

“The regular practice of certain contemplative methods seems to be able to alter the trajectory of age-related changes,” Davidson says. “Some studies even show that meditation can slow the age-related decline of gray matter in the brain.”

On this last point, Davidson understates things. Exciting research published in February out of UCLA compared two sample groups of 50 people, ranging in age from 24 to 77—a good demographic slice since gray matter actually begins declining when we’re in our 20s. One group was made up of people who did not meditate, the other of people who had been regular meditators for anywhere from four to 46 years. All 100 subjects’ brains were scanned with magnetic resonance imaging, and the results were unmistakable: the meditators showed less gray-matter loss in several regions of the brain compared with the nonmeditators.

“We expected rather small and distinct effects located in some of the regions that had previously been associated with meditating,” said Dr. Florian Kurth, co-author of the study. “Instead, what we actually observed was a widespread effect of meditation that encompassed regions throughout the entire brain.”

The Optimism Effect

ALMOST AS POWERFUL AS MEDITATION—AND CERTAINLY easier for people who would be perfectly happy to set aside time for solitary contemplation in a quiet place if

they could find the hour and the place and the quiet—is simple optimism. Challenges and setbacks and even tragedies are nonnegotiable parts of life, but what is negotiable is how you face them.

Dr. Hilary Tindle, a physician and clinical investigator at Vanderbilt University, has produced a body of work on the connection between attitude and health, and all of it points to the improbable power of just being hopeful. In one massive 2009 study, Tindle analyzed data from 97,253 women who had filled out questionnaires for the National Institutes of Health’s Women’s Health Initiative, trying to correlate hopefulness and mortality. Women who had scored high on optimism—being hopeful about the future—the results showed, had significantly lower rates of heart disease, cancer and mortality than women who scored high on pessimism.

Tindle also studied cynicism, which can be described as feelings of pessimism about other people, expecting them to be untrustworthy and even harmful. Women with lower cynicism, compared with those who viewed most other people with suspicion, had lower risk of death.

In a 2012 study, she compared more than 430 people who had undergone coronary-bypass surgery—284 of whom were diagnosed with at least low-level clinical depression and 146 of whom were not. The subjects all took the same optimism survey that the sample group in the other study had. Within eight months after surgery, the depressed pessimists had more than twice the complication and rehospitalization rate than the optimistic group.

“As a doctor my goal is to help people understand this connection more than they do,” Tindle says. “But they need to do so in a way that makes it actionable. In other words, how do we put all these new findings to work?”

That, ultimately, is the critical question. Researchers are divided on how possible it is for people who have made it to middle age cynical or stressed or sedentary to undo all the damage to their systems through outlook change and meditation alone. But the research is piling up that it can help—and it certainly can’t hurt.

As with most matters involving health, it comes down in large measure to lifestyle—diet, exercise, adequate sleep and positive attitude. That’s not sexy, but when it comes to longevity, take what works over what makes headlines. The fact is that the aging odometer never runs backward. The 70-year-old will always be 10 years older than the 60-year-old. But if you’re talking about how many years both of those people have remaining, put your money on a happy, active 70 over a cynical, sedentary 60.

That, if nothing else, puts a sweet twist on the hard rule that all lives must end: enjoy the time you’ve got, and you just might get more of it. ■

LONGEVITY GURU:



Steven Austad, researcher on aging at University of Alabama at Birmingham
Age: 68

AGING INTERVENTION:

“I don’t have a great relationship with relaxation. Exercise is one way I relieve stress. I find nothing more satisfying than going to bed at night and being so physically tired I can hardly lift my arms or my legs. If I died in a climbing accident at the age of 90, that would be perfect.”

CAN BRAIN GAMES KEEP MY MIND YOUNG?

BY JUSTIN WORLAND

LONGEVITY
GURU:



George Rebok,
cognitive-aging
researcher at
Johns Hopkins
Bloomberg
School of Public
Health Age: 65

AGING
INTERVENTION:

"I am an avid reader, attend lots of plays and concerts, and jog several times a week. I develop cognitive interventions for older adults, which helps me as much as I hope it helps them. I have no plans for retirement anytime soon."

IT'S EASY TO KEEP YOUR AGING BRAIN AS NIMBLE as it was in college. Log on to a website full of brain games or download the right apps, and within 20 minutes you'll be doing your part to sharpen your memory and slow the inexorable decline of your mental functions. At least that's what the companies behind this booming industry would have you believe. But is it true?

Concrete proof about the benefits of brain games is hard to come by, experts say, when it comes to measurably improving aspects of mental fitness, like having a good memory or sound reasoning. "People would really love to believe you could do something like this and make your brain better, make your mind better," says Randall W. Engle, the primary investigator at the Attention and Working Memory Lab at the Georgia Institute of Technology. "There's just no solid evidence."

That's not to say brain games are without benefit. Experts say these kinds of mental exercises can change your brain—just not in a way that necessarily slows its aging. The brain changes with just about everything you do, including mental training exercises. But numerous studies have shown that brain games lack what researchers call "transfer." In other words, repeating a game over and over again teaches you how to play the game and get better at it but not necessarily much else.

"It's like, you walk through fresh snow, you leave a trace. If you walk the same route again, the trace gets deeper and deeper," says Ursula Staudinger, director of the Butler Columbia Aging Center at Columbia University. "The fact that structural changes occur [in the brain]

does not imply that in general this brain has become more capable. It has become more capable of doing exactly the tasks it was practicing."

Brain-game designers, not surprisingly, disagree. Michael Scanlon, chief scientific officer at Lumosity, a large brain-game company, cites a 2007 study he led as support for his company's getting into the brain-game business in the first place. "Our basic intention was to release a product that helps people improve cognitive abilities," he says. Scanlon says the research, which Lumosity funded and conducted, found that online-based brain training can improve thinking. The small study of 23 people is one of several studies Lumosity has performed, though most have not been peer-reviewed.

As the brain-game industry has grown—revenue topped \$1 billion in 2012 and is projected to hit \$6 billion by 2020, according to a report from neuroscience market-research firm Sharp Brains—so has the criticism. More than 70 prominent brain scientists and psychologists signed a withering statement on the subject last year. The open letter, organized by the Stanford Center on Longevity and covered by media outlets across the world, argued that claims on behalf of brain games about improved cognition were "frequently exaggerated and at times misleading." The scientists also laid out criteria that the games would have to meet to convince them of their merit. It's a tough list.

Still, Staudinger allows that brain games do have the benefit of being fun—which may make them a worthwhile way for people of any age to spend time. There's no question that many consumers have become devoted to them. Lumosity, which offers some games free and a premium membership at a cost, says it reached 50 million members in 2013.

The issue most scientists have with people playing the games frequently is the opportunity cost: you could be doing something else that actually would improve your cognitive ability. Most researchers agree that the activity most clearly proven to slow aging in the brain is aerobic exercise. Other factors that sound scientific research has shown to help an aging brain include healthy dietary choices, regular meditation and learning new things.

As brain games evolve and new, impartial research emerges, it's possible that the scientific consensus about their impact on the brain will change. But Engle doesn't think it's likely. "I need fairly substantial evidence that it's not kind of a gimmick," he says. "I'm a scientist." ■

WHY DO PRESIDENTS LIVE SO LONG?

BY NANCY GIBBS AND MICHAEL DUFFY

HERE IS A CLASSIC CONUNDRUM OF CAUSE AND EFFECT: the men who survive the crushing pace (not to mention lethal diet) of multiple U.S. presidential campaigns and go on to hold one of the most stressful jobs in the world also have a habit of outliving the rest of us.

In the fall of 2012, Jimmy Carter, now 90, took his place in history as the President who had lived the longest after leaving the White House—31 years and 231 days out of office, breaking the record of Herbert Hoover, who died in 1964. Carter left the White House in January 1981, went back to Georgia and proceeded to teach, improve his Spanish, paint, write poetry, win the Nobel Peace Prize and write 21 books about, among other things, how to find a second career. He is rather typical. Ronald Reagan lived until 93. So did Gerald Ford. George Bush the elder, like Carter, is 90. Even in the 19th century, when the average man died at age 47, U.S. Presidents lived an average of 69 years, and John Adams made it to 90. Granted, the presidential demographic typically enjoys access to better nutrition, health care and living conditions. Yet these men also knew pressure that few of us can imagine, and stress is a proven toxin.

So does the presidency endow people with some special life force, or do they share some quality that helps get them to the White House in the first place? Is there something about holding the office that forces men—and presumably one day women—to live a healthy lifestyle rather than just aspire to it?

For starters, there is constant vigilance. Ignoring troubling symptoms is not an option for someone who has a doctor following him virtually everywhere he goes; medical teams are steps away at all times. Even when Presidents return to private life, they are shadowed by Secret Service details, albeit smaller ones. Among those agents, an EMT is always on duty. Think of it as a retirement benefit.

At least since the mid-1970s, nearly every President has been devoted to some kind of regular exercise. Ford swam and skied. Carter jogged almost daily. Reagan



HALE TO THE CHIEF

Presidents get the best medical care and tend to exercise, whether for fitness, photo ops or plain old sanity

chopped brush and lifted weights. Bush the younger took to biking when his knees put a halt to running. If some of that recreation was done for public relations purposes, most Presidents have come to rely on it for private sustenance. (Not everyone got the memo: as President, Bill Clinton may have been conspicuously photographed in his jogging shorts, but he typically relaxed in the office by reading, doing crosswords and chewing on cigars, a pattern that probably helped land him in New York–Presbyterian Hospital for bypass surgery in 2004 and another surgery six years later. He is now a part-time vegan.)

The elder Bush, who as President was known to try three or four different sports in a single day, still takes exercise to extremes and jumped out of airplanes with Army skydivers at ages 80, 85 and 90. “I want people at my age to know they don’t have to slow down,” he once told us. Last summer the elder Bush had young aides haul his wheelchair out on the dock of his Maine seaside compound so he could bomb around the North Atlantic on his speedboat.

There’s body, and then there’s mind. We all may



Adams, Ford, Carter and Reagan are some of the longest-lived Presidents

know we need to manage our stress, but for a sitting President this is imperative, a consistent part of the advice they give one another. Be sure to rest. Take your vacations. Use Camp David. After the hard-fought 1960 election, Richard Nixon and John F. Kennedy met in Key Biscayne, Fla., where Nixon made an unsolicited promise. I may criticize your policies, he told Kennedy, but “of one thing I can assure you: I shall never join in any criticism of you, expressed or implied, for taking time off for relaxation. There is nothing more important than that a President be physically, mentally and emotionally in the best possible shape to confront the immensely difficult decisions he has to make.”

For many Presidents, stress acts as a force multiplier. The toll stress takes, research has shown, depends on how it is viewed. What is normally harmful becomes helpful when it is treated as a fact of life or a chance to learn. The more powerful a person is, the more in control, the better the odds he has learned to use stress to his advantage. Clinton aides flaunted his mantra like a bumper sticker: “That which doesn’t kill him only makes him stronger.” For people with that kind of

resilience—sometimes called adaptive competence—stress can correlate with a longer life.

Out of office, the challenge changes. Presidents tend to be not just type-A but triple-A personalities, guys who don’t spend a lot of time lounging around checking their Facebook feeds (although Clinton and Bush the elder both tweet). Slowing down isn’t something they really want to do. “When I got out of the White House,” Carter recalled, “I had a life expectancy of 25 [more] years, and so I needed to figure out how to use it.”

Former Presidents are particularly well positioned to do good: to engineer an immense humanitarian rescue effort, as Hoover did in the years after World War II, or to promote reform and democracy, as Ford and Carter did as unlikely partners. Clinton launched his Global Initiative, while George W. Bush has focused on veterans. Engaging in meaningful work also correlates closely with longevity—and modern Presidents have typically made it their mission to leverage their fame for a cause they believe in. So, in psychological terms, they settle in for the long haul.

Of course, ex-Presidents have something else to keep them going: a need to burnish their reputation for history, particularly if their time in office didn’t go exactly as they had planned. Most of us are not quite as likely to have accumulated as many regrets and scars, nor are we in as strong a position to do something about them. Correcting—or whitewashing—the record on a global scale probably helps keep the former Presidents alive a little longer, if only because there is often so much work to be done. That can be a campaign that never ends, a second life’s work.

It may even be that unloved Presidents have an edge in this area. Few wept when Harry Truman left Washington in 1953, ceding the White House to the wildly popular Dwight Eisenhower. But Truman lived another 19 years, and his reputation improved annually. Even Nixon, who resigned in 1974, lived two more decades, writing books, opening a think tank and driving his successors more or less crazy. He was determined to have the last word, which might be a useful longevity strategy. Asked once how he had survived all the criticism aimed at him during the Depression, Hoover said simply, “I outlived the bastards.”

Finally, there’s the kind of legacy you can read about in books, and then there’s the kind any fool can see. And so as 2015 unfolds, it’s important to note that three of the four current ex-Presidents may have something else to live for now. Clinton’s wife Hillary is trying to become the 45th President, and so is Bush son and brother Jeb. Aides to the elder Bush privately admit that the prospect of seeing a second son run for the White House helps keep him going.

And nothing gets the blood pumping like a little competition among friends. ■

93

Age at death of the two oldest U.S. Presidents, Ronald Reagan and Gerald Ford



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BEAUTIFUL

*“I want
to be
a bench.
Recycle me.”*

WHAT DIET HELPS PEOPLE LIVE THE LONGEST?

BY ALEXANDRA SIFFERLIN

WE'RE ACCUSTOMED TO THINKING ABOUT DIETS as a short-term fix for unwanted weight gain, but eating for a long, healthy life requires a different approach. The priority should be a diet that prevents illness—and especially heart disease, the No. 1 killer in the U.S. Many experts believe that means a diet high in vegetables, whole grains and some fat. But a meal plan for longevity might also mean cutting back on protein—and, some experts say, reducing calories overall.

Many experts look to Europe—to the Mediterranean, specifically—for dietary secrets to a long life. While some debate remains about what people in the region actually ate, there's near consensus about the benefits of fish, fruits and vegetables and extra-virgin olive oil.

In 2009 researchers randomly assigned 7,447 people at high risk for heart disease to one of three diets: the Mediterranean diet, with lots of olive oil; the Mediterranean diet, with extra nuts; and a low-fat control diet. Those who followed one of the versions of the Mediterranean diet, which was high in fat, had about a 30% lower risk of having a heart attack or stroke and a similar reduction in risk of dying of heart disease after five years. The findings were so impressive, the study ended early. (With results that strong, it's considered unethical to withhold the advantageous approach from the other groups.) The findings were published in 2013 in the *New England Journal of Medicine*.

It's impossible to parse which nutrients, exactly, produced the benefits. Many experts think it's the result of the foods in combination. And at odds with some nutrition trends, the healthy diet was also relatively low in

protein, which provided on average just 17% of daily calories, compared with up to 35% in the standard American diet. Also raising questions about protein is a 2014 study in *Cell Metabolism*. It showed that middle-aged Americans who ate a lot of animal protein were more likely to die of cancer and other causes, compared with people who opted for more plant-based protein. Study author Valter Longo, director of the University of Southern California's Longevity Institute, recommends that people cut down on protein overall to live longer.

That advice may raise eyebrows, since many diets for weight loss, including the popular paleo diet, advocate high protein. "There's a misconception that it's O.K. to eat a lot of it," Longo says. "People don't understand it could lead to some major aging factors." One such factor is the impact of the growth hormone IGF-1 (insulin-like growth factor 1). While it's important for early development, getting too much from high-protein foods later may accelerate aging.

Longo and others were tipped off to the possibilities when studying a rural population in Ecuador with a genetic mutation that keeps their IGF-1 very low. They found that IGF-1-deficient people are typically short in stature but also rarely get diseases that tend to hit people as they age, like cancer or Type 2 diabetes. Limiting animal protein is a way to lower IGF-1 and keep aging effects at bay, says Longo.

A sizable camp of nutrition scientists also say we should cut back on how much we eat overall, with some recommending intermittent fasting—alternating between regular food consumption and short periods of eating almost nothing. Others say a diet with about 25% fewer calories than normal may extend life, as has been shown in many animal studies. In humans, studies have found that significantly reducing calorie consumption may reduce cardiovascular-disease risk—which could, in turn, impact longevity.

One thing experts can agree on is that we'd all benefit from less sugar, particularly added sugar in the form of fructose. A 2015 study in *Mayo Clinic Proceedings* pinpointed added fructose as the primary driver of Type 2 diabetes, which has reached epidemic proportions in the U.S.

For now, unsatisfying though it may be, the bottom line is that more research is needed before any one diet can be heralded as the key to a long, healthy life. But a diet low in sugar and high in plants, nuts, fruit, fat and some protein is a good bet. Just be sure to add the other secret ingredient too: exercise. ■

'MY LOW-PROTEIN DIET IS ALMOST COMPLETELY PLANT- AND FISH-BASED. I HAVE ONLY ONE MAJOR MEAL A DAY: DINNER.'

LONGEVITY GURU:



Valter Longo, director of the USC Longevity Institute
Age: 47



EAT WELL, LIVE LONGER:

People who followed the modern Mediterranean diet had a 30% lower risk of heart attack than people on a low-fat diet

DO MARRIED PEOPLE REALLY LIVE LONGER?

BY ALEXANDRA SIFFERLIN

THE SHORT ANSWER IS YES, ESPECIALLY IF YOU ARE A man—but there are plenty of caveats.

“Marriage, if you stay married, is wonderful social support,” says Peter Martin, a professor of human development and family studies at Iowa State University. Having a partner during middle age, which is when chronic diseases often first appear, is protective against premature death, according to a 2013 study that Martin and his co-authors published in *Annals of Behavioral Medicine*. They also found that people who never married were more than twice as likely to die early as people in stable marriages. “Being married is a big factor in survivorship,” Martin concluded.

Martin’s team isn’t the first to make the connection between marriage and longer life. A 2013 study of 15,330 cardiac events showed that married people have considerably better prognoses than singles. The effect has been observed beyond heart-disease patients. Other research indicates that married people are more likely to have their cancer detected early and less likely to die early from it.

Longevity researchers believe it’s tied to the live-in emotional and physical support. When you have someone around all the time, it means you have someone to remind you to take your meds and go to the doctor. And if you fall down or otherwise hurt yourself, there’s a good chance there will be someone around to help you. Married people are also more likely to adopt healthy behaviors like exercising and quitting smoking if their partner does. Martin, who interviews centenarians, says he’s heard many of them say they abide by healthy behaviors their long-deceased spouse used to remind them about. “Some of the marriage benefits seem to outlast the partner who doesn’t make it to very old age,” he says.

The so-called marriage effect doesn’t appear to benefit men and women equally, however. The Terman





In her book *The Lovers*, photographer Lauren Fleishman documents couples who've been together for more than 50 years. Clockwise from top left: **Chong and Sung Kwak**, married 55 years; **Theauther and Annie Love**, 60 years; **Joseph and Dorothy Bolotin**, 76 years; and **Eric Marcoux and Eugene Woodworth**, 60 years.





Gino and Angie
Terranova,
married 67 years

Life-Cycle Study—an ongoing project that started following more than 1,500 people in 1921—found that whereas steadily married men were likely to live substantially longer than divorced or remarried men, divorced women lived almost as long as their married peers.

“Women who thrived in a good marriage stayed especially healthy,” explains Howard S. Friedman, a professor of psychology at the University of California, Riverside, and author of *The Longevity Project*, which breaks down and continues to build on the Terman research. “But women who stayed single, got and stayed divorced or were widowed often lived quite long without the burdens of husband trouble. They had good friends instead.” (Plenty of research shows that whether people are married or not, strong social connections and friendship are especially important factors in healthy aging.)

Researchers are also learning that the quality of the marriage might matter—a lot. The husband-and-wife research duo Janice Kiecolt-Glaser and Ronald Glaser have conducted a number of experiments at Ohio State University on the topic. In one, they brought couples into their lab, inserted IV blood-collection catheters and then asked them to talk through an especially troublesome aspect of their marriage—things like finances,

sex or their in-laws. They found that couples who are hostile toward each other tend to have more stress hormones in their blood, less adaptive immune systems and slower metabolic rates after eating high-fat meals. “The way people treat each other on a daily basis clearly impacts physical health,” says Kiecolt-Glaser. Poor marital quality and the stress associated with it are linked to differences in inflammation, a marker for disease, she adds. “That’s a great pathway to all the nastiness that comes with aging.”

Even the best-case scenario of a happy and long marriage can come with a sad, if darkly romantic, twist: couples who die in old age within days or months of each other. While it’s not completely understood, experts suggest that broken-heart syndrome could be to blame. Broken-heart syndrome—a colloquial name for something called stress-induced cardiomyopathy—can be caused by an emotionally stressful event like the death of a loved one or even a very tough breakup. It’s often mistaken for a heart attack, but instead of blocked arteries, the culprit is a tsunami of stress hormones that cause the heart to temporarily expand, limiting its ability to pump. Still, it’s probably a risk most lovebirds are willing to take for a satisfying relationship—and a longer life. ■

IT'S TIME TO EMBRACE LIFESTYLE MEDICINE

BY DR. DEAN ORNISH

MEL LEFER'S CARDIOLOGIST TOLD HIM HIS heart disease was so severe he was unlikely to survive even a year. He was incapacitated by chest pain up to 30 times a day. More than 28 years ago, I treated him with a program focusing on diet, exercise, stress management and social support—and he has remained angina-free ever since. Tests showed that his heart disease was reversing. He's now 82 and leads a full life.

A convergence of forces has made so-called lifestyle medicine the most compelling trend in health care. Start with an aging population, and add an economic imperative to control spending and a political debate over how best to do it. Then throw in evidence that lifestyle changes can work as a treatment for some chronic diseases—either in combination with drugs and surgery or as an alternative—at a much lower cost and without side effects.

For almost four decades, my colleagues and I at the nonprofit Preventive Medicine Research Institute and at the University of California, San Francisco, have used science to test low-tech, low-cost lifestyle interventions. We landed on a simple prescription: a whole-foods- and plant-based diet; stress-management techniques, including yoga and meditation; moderate exercise; and social support. In short: eat well, move more, stress less and love more.

In randomized, controlled trials, we found that lifestyle changes alone can often reverse the progression of severe coronary heart disease. They may begin to reverse Type 2 diabetes and slow, stop or even reverse the progression of early-stage prostate cancer.

Tens of millions of Americans have been

prescribed drugs to lower cholesterol, blood pressure or blood sugar. When the patient asks, "How long do I have to take these drugs?" the reply is usually "Forever." But when patients make changes, they can often reduce or discontinue medication under a doctor's supervision.

These studies helped persuade Dr. Kim Williams, the incoming president of the American College of Cardiology, to go on a whole-foods- and plant-based diet instead of committing to a lifetime of cholesterol-lowering drugs. As he wrote, "Wouldn't it be a laudable goal of the American College of Cardiology to put ourselves out of business within a generation or two? Improving our lifestyles with improved diet and exercise will help us get there."

The costs—both human and financial—of drugs and surgery are well documented. Randomized, controlled trials have shown that stents and angioplasties do not prolong life or prevent heart attacks in most stable heart patients. Only a small percentage of men who were treated for early-stage prostate cancer with surgery or radiation may benefit. Type 2 diabetes and prediabetes affect almost half of Americans over age 20, yet drug treatments to lower blood sugar do not prevent the onset and complications of diabetes as well as lowering blood sugar with diet and lifestyle does. And we found in a controlled study that lifestyle changes lengthen telomeres, thereby reversing aging on a cellular level.

Right now, 86% of the \$3 trillion we spend each year on health care in the U.S. is for chronic diseases that can be treated through lower-cost interventions. That's one reason it was a goal of Obamacare to radically change the incentives for how doctors treat patients. In a fee-for-service environment, more operations and hospitalizations generate more revenue. Under the Affordable Care Act, new models of payment reward providers for better outcomes, reducing avoidable procedures by aligning incentives to encourage healthy lifestyles.

Lifestyle medicine is now reimbursable. Medicare and many private insurers are covering a lifestyle program for heart disease that my team and I developed. This is a game changer, because when reimbursement changes, so do medical practice and even medical education.

This kind of medicine is not just about how long we live but also how well. And because the mechanisms of health are so dynamic, you're likely to feel so much better, so quickly. It reframes the reason for making these changes from fear of dying—to joy of living. ■

LIFESTYLE MEDICINE IS NOT JUST ABOUT HOW LONG WE LIVE BUT ALSO HOW WELL WE LIVE

LONGEVITY GURU:



Dean Ornish is the founder and president of the Preventive Medicine Research Institute and a clinical professor of medicine at the University of California, San Francisco
Age: 61

THE WEEK
CHRISTINA
RETURNS TO
THE VOICE

The Culture

Oscar Tip Sheet Who'll win, and why, in the closest race in ages

By Richard Corliss

THREE OF THE FOUR ACTING CONTESTS ARE SEWN up, and the fourth (Best Actress) is reaching mathematical certitude. The Best Director prize looks to be won by a Mexican for the second straight year. But when the Academy Awards air on Feb. 22, on ABC with host Neil Patrick Harris, the Best Picture category will make this one of the cloudiest Oscar races in ages.

The top contenders are trickster endeavors, each filmed in 30-some days: *Birdman*, which pretends to be a single shot lasting nearly two hours, and *Boyhood*, which spans 12 years of a Texas lad's life. Earlier awards from the most influential Hollywood guilds—Producers, Directors and Screen Actors—give *Birdman* the edge: no film that failed to take at least one of these awards has won Oscar's top prize since 1996, when *Braveheart* defeated the guilds' favorite *Apollo 13*. Then again, the British Academy (BAFTA) has picked the "correct" film for the past six years. And this time, BAFTA chose *Boyhood*.

Hovering above these two acclaimed movies is the (red state) elephant on the ballot: *American Sniper*, which has earned more at the domestic box office than the other seven Best Picture nominees combined. But it won't win. The Academy voters typically prefer to honor an artistic triumph (*12 Years a Slave* last year) over a crowd pleaser of distinction (*Gravity*).

Here, then, are my picks for which films, filmmakers and stars will carry home 8½ lb. of Motion Picture Academy love from the 87th annual awards.



BEST PICTURE

American Sniper

Birdman

Boyhood

The Grand Budapest Hotel

The Imitation Game

Selma

The Theory of Everything

Whiplash

Four of the finalists—*American Sniper*, *The Imitation Game*, *Selma* and *The Theory of Everything*—fit the old mold of fact-based stories about heroes conquering adversity. None of these is in serious play for Best Picture. Sorry, *Selma*.

What the Hollywood elite really loves is movies about acting. Consider that three of the last four Oscar winners—*The King's Speech*, *The Artist* and *Argo*—are tributes to the divine duplicity of performance in a palace, a movie studio or a U.S. embassy. *Birdman* finely fits these contours and should nose out *Boyhood* for the biggest Oscar.



BEST DIRECTOR

Alejandro G. Iñárritu
Birdman

Richard Linklater
Boyhood

Bennett Miller *Foxcatcher*

Wes Anderson *The Grand Budapest Hotel*

Morten Tyldum
The Imitation Game

By all awards logic, *Foxcatcher*, which scored nominations for Director, Screenplay, Actor and Supporting Actor, should also be a finalist for Best Picture. It isn't, and this chilly true-life tale may end up empty-handed on Oscar night. *The Imitation Game*, with its gaudy cache of eight nominations, could be similarly stiffed. Scratch Miller and Tyldum.

Anderson's fantasy of European luxe deserves Oscars galore but won't get this one, leaving Linklater to duke it out with Iñárritu. Last year Iñárritu's pal Alfonso Cuarón took Director for *Gravity*, though his space epic lost Picture to *12 Years a Slave*. Degree of difficulty will triumph again. Advantage *Birdman*.



MAKING OSCAR HISTORY



At 84, Robert Duvall is the oldest Best Supporting Actor nominee ever. (He's the same age as *American Sniper* director Clint Eastwood.) If Julianne Moore wins, she'll be only the second star in her 50s to get Best Actress.

Oscar's memory is short: if *The Grand Budapest Hotel* takes the Best Picture prize, it'll be the first movie released in the first three months of the year to win since *The Silence of the Lambs* in 1992.

This year, Bradley Cooper became the 10th man to score an acting nomination in three consecutive years. Of the nine who've achieved this feat before, only one—Richard Burton—didn't eventually win an Oscar.

Front runners *Boyhood* and *Birdman* have, to date, each grossed under \$40 million in the U.S. Either would be only one of two Best Pictures in the past 25 years with such a low box-office take.

BEST ACTOR

Steve Carell *Foxcatcher*

Bradley Cooper
American Sniper

Benedict Cumberbatch
The Imitation Game

Michael Keaton *Birdman*

Eddie Redmayne *The Theory of Everything*

In the race of conjoined-twin movies about tortured Cambridge geniuses, Cumberbatch loses to Redmayne's Stephen Hawking impersonation. Redmayne and Keaton both do a heck of a lot of acting, with the young Brit taking the SAG and BAFTA prizes. He's the favorite to win, as Cooper settles for a third consecutive Best Actor nod.



BEST SUPPORTING ACTOR

Robert Duvall *The Judge*

Ethan Hawke *Boyhood*

Edward Norton *Birdman*

Mark Ruffalo *Foxcatcher*

J.K. Simmons *Whiplash*

Simmons, a character-actor lifer most familiar to TV viewers for his Farmers Insurance commercials, has been a lock since the earliest critics' awards for his turn as the tyrannical teacher in the highly praised, barely seen *Whiplash*. No reason even to provide aisle seats for the other four nominees, though Norton's sexy-menacing work merits lavish praise.



BEST ORIGINAL SCREENPLAY

Alejandro G. Iñárritu, Nicolás Giacobone, Alexander Dinelaris and Armando Bo *Birdman*

Richard Linklater
Boyhood

E. Max Frye and Dan Futterman *Foxcatcher*

Wes Anderson and Hugo Guinness *The Grand Budapest Hotel*

Dan Gilroy *Nightcrawler*

We're looking for spoken words here, eloquent and precise. So discard *Foxcatcher*—a tone poem of mute male gazes. The scenes in *Boyhood* seem less written down than lived in and overheard. *Birdman* is plenty chatty, but the dialogue isn't as telling or voluble as the labyrinthine camerawork.

Nightcrawler, which deserved more Oscar love than it got, portrays its smiling sociopath (Jake Gyllenhaal) through his creepy-smooth patter. But the glittering specimen is *The Grand Budapest Hotel*. The lines spoken by concierge Ralph Fiennes (robbed of a Best Actor nomination) are every bit as florid and delectable as the movie's Russian-doll design. This will have to be Anderson's take-home prize.



BEST ACTRESS

Marion Cotillard
Two Days, One Night

Felicity Jones *The Theory of Everything*

Julianne Moore
Still Alice

Rosamund Pike *Gone Girl*

Reese Witherspoon *Wild*

Sadly, Best Actress is nearly an irrelevant category in this year's Oscar chatter: Cotillard, Pike and Moore are the only nominees from their films. As a professor battling early-onset Alzheimer's, Moore is subtle, poignant—great, really—and a sure winner. Also, with four previous nominations, she's long overdue.



BEST SUPPORTING ACTRESS

Patricia Arquette
Boyhood

Laura Dern *Wild*

Keira Knightley
The Imitation Game

Emma Stone *Birdman*

Meryl Streep
Into the Woods

The movie could almost be called *Momhood*, and Arquette, who brought grit and a frazzled eccentricity to the main adult role in Linklater's family-values drama, should probably be vying for Best Actress. But she has taken nearly every award in this safe slot and is primed to become the 16th actress to win an Oscar for which Meryl Streep was nominated.



Killer Business

An investor turned activist outfoxes oligarchs in Russia

By Bill Browder

BILL BROWDER MAY BE RUSSIAN PRESIDENT Vladimir Putin's No. 1 foe. For the past several years the CEO of Hermitage Capital Management has led an international campaign to expose deep corruption and human-rights abuses in Putin's Russia. His efforts culminated with Congress's 2012 passage of the Magnitsky Act, which forbids gross abusers of human rights in Russia from banking in or visiting the U.S. It's named after Browder's lawyer Sergei Magnitsky, a whistle-blower who was murdered in a Moscow prison in 2009 after uncovering massive Russian government fraud.

Before he became an unlikely human-rights activist, Browder was for a time one of the largest foreign investors in Russia. In the tumultuous years following the fall of the Soviet Union, he made a fortune for himself and his clients by confronting some of the country's corrupt oligarchs. But in Russia, shareholder activism could be dangerous work, as Browder explains in this excerpt from his new book Red Notice: A True Story of High Finance, Murder and One Man's Search for Justice.

IN 1939, WINSTON CHURCHILL MADE A FAMOUS speech on whether he thought Russia would join the Second World War: "I cannot forecast to you the action of Russia. It is a riddle wrapped in a mystery inside an enigma, but perhaps there is a key. That key is Russian national interest."

Fast-forward to the present, when Russia's erratic behavior is terrifying the whole world. Churchill's observations about Russia still apply, but with one big proviso. Instead of the national interest guiding Russia's actions, they are now guided by money, specifically the criminal acquisition of money.

I can attest to this firsthand. In 1996 I'd started an investment fund in Moscow called the Her-

mitage Fund, in partnership with the billionaire investor Edmond Safra. We had a spectacular initial success. It was the best-performing fund in the world in 1997, up 718% from inception with assets of more than \$1 billion.

But our success would all be thrown into jeopardy in January 1998 when we collided with the corruption Russia is so famous for.

It began that month at a New Year's party, where I confronted Boris Jordan, one of Russia's leading investment bankers, about a financial scheme called a dilutive share issue that was going to steal \$87 million from my fund.

He met me head-on with a meaty handshake. "Bill, how are ya?"

"Not great, Boris. What's going on with Sidanco? If this share issue goes through, it's going to be a real problem for me."

The fund, together with Safra, had invested heavily in an undervalued Russian oil company named Sidanco which had gone up eight times in one year, making the fund and Safra more than \$100 million. After this big win, Boris' boss, the billionaire oligarch and former Deputy Prime Minister Vladimir Potanin, decided that we shouldn't have that money. Boris and his colleagues threatened to implement this dilutive share issue, which would nearly wipe out our investment.

Boris didn't want a public confrontation at a New Year's party, so he said, "Bill, it's all a big misunderstanding. Don't worry about a thing." He turned his attention to a tray of canapés and picked one up. Avoiding my gaze, he said, "Tell you what. Come over to Renaissance tomorrow at 4:30 and we'll sort it out."

I took him at his word and tried to enjoy the party. The next day at 4:30 p.m., I walked into Renaissance Capital's headquarters next to the



Red alert Browder's memoir tells of his investment success in post-Cold War Russia and his eventual collision with Russian President Vladimir Putin



Moscow River. I was unceremoniously shown to a windowless conference room. I was not offered anything to eat or drink, so I sat there and waited.

And waited.

And waited.

I was ready to leave when the door finally opened—only it wasn't Boris. It was Leonid Rozhetskin, a 31-year-old Russian-born, Ivy League-educated lawyer whom I'd met on a few occasions.

"I'm sorry Boris couldn't make it," Leonid said in English. "He's busy."

"I am too."

"I'm sure you are. What brings you here today?"

"You know what, Leonid. I'm here to talk about Sidanco."

"Yes. What about it?"

"If this dilution goes forward, it's going to cost me and my investors—including Edmond Safra—\$87 million."

"Yes, we know. That's the intention."

"What?"

"That's the intention," he repeated matter-of-factly.

"You're deliberately trying to screw us?"

He blinked. "Yes."

"But how can you do this? It's illegal!"

"This is Russia. Do you think we worry about these types of things?"

I couldn't believe this. "Leonid, you may be screwing me over, but some of the biggest names on Wall Street are invested with me. The pebble may drop here, but the ripples go everywhere!"

"Bill, we're not worried about that."

We sat in silence as I processed this.

He looked at his watch and stood. "If that's all, I have to go."

Shocked, I tried to think of a reply and blurted, "Leonid, if you do this, I'm going to be forced to go to war with you."

He froze, and I did too. After a few seconds he began to laugh. What I'd said was preposterous and we both knew it. Go to war? Against an oligarch? In Russia? Only a fool would do that. When Leonid was finally able to contain himself, he said, "Is that so? Good luck with that, Bill." Then he turned and left.

I was so upset that for several seconds I couldn't move, and when I finally could, I shook with humiliation and anger. I marched out of Renaissance into the freezing Moscow night. When I got home I called Edmond. Nobody likes to lose money, and he was a notoriously bad loser. When I finished telling him the story, he asked, "What are we going to do, Bill?"

"We're going to fight these bastards, that's what. We're going to go to war."

"What are you talking about, Bill? You're in Russia. You'll be killed."

I gathered my wits. "Maybe I will, maybe I won't. But I'm not going to let them get away with it." I didn't care if I was being brave or stupid, or if there was even a difference. I'd been backed into a corner and I meant what I said.

"I can't be part of this, Bill," he said, safe in New York, 4,650 miles away.

I was not safe, though, and it filled me with adrenaline. "Edmond, you're my partner, not my boss. I'm going to fight these guys whether you're with me or not."

He didn't have anything else to say and we hung up. I didn't sleep at all that night.

Wartime

BY THE NEXT MORNING, REGRET AND UNCERTAINTY had crept into me. But when I reached my office, a rush of activity shook me from my thoughts. Packed into the room were more than a dozen heavily armed bodyguards. The one in charge came up to me and in an Israeli accent pronounced, "I'm Ariel Bouzada, Mr. Browder. Mr. Safra sent us. We have four armored cars and 15 men. We'll be with you for as long as this situation lasts."

Apparently, Edmond was going to fight with me after all. But how in hell was I going to fight an oligarch?

I assembled my team and we devised a plan. Our first step was to call all the Western investors who did business with Potanin and explain the details of what he was doing to us. Our message was simple: If you don't stop him, you could be next.

Every other time foreigners got ripped off in Russia they would attempt to figure out how to resist. But then their lawyers and advisers would point out that retaliation was infeasible and dangerous, and after all the tough talk, they would slink away like wounded animals.

But this wasn't every other time. I was never going to let Potanin get away with this without a fight.

Less than a week later, Boris called, irate and rattled. "B-Bill, what the hell are

you doing calling our investors?"

I tried to sound as calm as possible. "Didn't Leonid tell you about our meeting?"

"Yes, but I thought you understood the score."

I continued to play along, praying that my voice wouldn't crack. "What score?"

"Bill, you don't seem to understand—you're not playing by the rules!"

With a steadiness that surprised even me, I said, "Boris, if you think I'm not playing by the rules now, wait until you see what I'm about to do to you next." I didn't wait for his response and hung up, exhilarated. I'd won Round 1.

The next part of our plan was to make the story public. I got in touch with a reporter from the *Financial Times* and shared all the details. She devoured every word and promised that the article would be big. She contacted Potanin to get his side.

Because we were in Russia, Potanin had no choice but to escalate. His response was along the lines of "Bill Browder is a terrible and irresponsible fund manager. If he had done his job properly, he would have known I was going to do this to him. His clients should sue him for every penny he's worth."

It was an admission of his intent to screw us, and it was on the record.

The *FT* published the story, which was then picked up by the rest of the financial media. Over the next few weeks, Sidanco's dilutive share issue became the cause célèbre in Moscow—along with bets on how long I was going to survive.

With so much coverage in the press, I decided to file a complaint with the Russian Federal Securities and Exchange Commission (FSEC). Pressured by the high profile of the story, the commission's top official, a remarkably uncorrupted man named Dmitry Vasiliev, announced that he would take up the case. But investigations into Russian corporate malfeasance were virtually unprecedented, and I had no idea how Vasiliev would act.

Unbeknownst to me, Edmond wasn't willing to wait. He had dispatched his main deputy, Sandy Koifman, to Moscow to negotiate a settlement with Potanin behind my back. I found out about this only by chance when one of my brokers spotted Sandy in Moscow.

I immediately called Safra's chief legal officer in New York. He was embarrassed but said, "Bill, I'm sorry, but you're way out of your league here. This is serious business involving a lot of money. I think

Sidanco's dilutive share issue became the cause célèbre in Moscow—along with bets on how long I was going to survive



Shadowland When Browder went to “war” with a Russian oligarch, he knew he was in danger—but refused to back off

it’s best if you let us take over from here.”

He may have been right if this were the U.S. or Great Britain, but this was Russia. I replied, “If you show even the smallest sign of weakness to these guys, our investors will lose everything, and that will be on you.” I asked for more time to see what would happen with the FSEC. I got 10 more days. “After that, if nothing’s happened, we’re taking over.”

The following days ticked by without so much as a peep from Vasiliev. On day six, Edmond’s lawyer called and said, “Look, Bill, we promised you 10 days, but nothing seems to be happening. We appreciate all that you’ve done, but it’s not working.”

The next morning I dragged myself into the office with the intention of controlling the damage. Only I didn’t have to. Without any warning, a fax arrived with a printout of the front page of the *Financial Times*. The headline read, WATCHDOG ANNULS SIDANCO BOND ISSUE. Vasiliev had shut down the whole thing.

Russia Retaliates

THAT WAS IT. I HAD WON. I’D MET THE oligarch in the prison yard and earned some respect. More than that, I’d learned how to fight the Russians, who weren’t as invincible as they seemed.

With my new sense of self-confidence I went after the oligarchs proactively. In

the subsequent years I exposed corruption at Sberbank, Unified Energy Systems and Gazprom with similar success. It turned out that Vladimir Putin, who’d come to power in 2000, had the same set of enemies as me. The oligarchs were stealing power from him and money from me. Every time I went after an oligarch Putin would mobilize the authorities and slap them down.

It seemed as if it was all too good to be true, and it was. Early one morning in October 2003, as I was running on the treadmill in my apartment watching CNN, a breaking headline came across the screen saying that Mikhail Khodorkovsky, Russia’s richest man, had been arrested.

Khodorkovsky had broken Putin’s golden rule: “Stay out of politics, and you can keep your ill-gotten gains.” Khodorkovsky had given millions of dollars to the opposition parties for the upcoming parliamentary elections, and he had begun to make statements that were clearly anti-Putin. Putin had to make an example out of him.

Khodorkovsky was put on trial, convicted and sentenced to nine years in prison. During the trial, Putin did something unprecedented: he allowed TV cameras in the courtroom to film Russia’s richest man as he sat silently in the defendant’s cage.

After Khodorkovsky was found guilty,

I think most of Russia’s oligarchs went one by one to Putin and said, “Vladimir Vladimirovich, what can I do to make sure I won’t end up sitting in a cage?”

I wasn’t there, so I’m only speculating, but I imagine Putin’s response was something like this: “Fifty percent.”

Not 50% to the government or 50% to the presidential administration, but 50% to Vladimir Putin. I don’t know this for sure. What I do know for sure was that after Khodorkovsky’s conviction, my interests and Putin’s were no longer aligned. He had brought the oligarchs to heel, consolidated his power and, by many estimates, become the richest man in the world.

It didn’t take long for Putin to turn against me. In November 2005, I was expelled from the country and officially declared a threat to national security.

I thought I was done with Russia, but Russia was not done with me. Everything that had happened up until that point involved money, but what I couldn’t imagine was that in the ensuing years, Putin’s personal vendetta against me would see people close to me imprisoned and dead as my conflicts with Russia metastasized and spun wildly out of control. ■

Red Notice: A True Story of High Finance, Murder and One Man’s Fight for Justice by Bill Browder. Published by arrangement with Simon and Schuster Inc. Copyright © 2015 by Hermitage Media Limited

Out of place Carey, born in Australia, has lived in New York City for many years but continues to write about his home country



Literary Hack. *Amnesia* searches for the web's deepest motivations

By Daniel D'Addario

THE WORKS OF NOVELIST PETER CAREY HAVE LONG traveled to unexpected places. Australian by birth, Carey won two Booker Prizes for depicting the strange, lawless past of his home country in *Oscar and Lucinda* and *True History of the Kelly Gang*. In his other books, he has skittered through history and across the English-speaking world, from Victorian London to 1970s New York to the early America visited by Alexis de Tocqueville. In his new novel, *Amnesia*, Carey lands in Australia once again, but the history is more recent: it tells the story of a reporter assigned to write about a brilliant, anonymous cyberterrorist.

Felix Moore, the novel's protagonist, begins the tale in a state of financial ruin. That's partly what compels him to accept a commission from a politically engaged and wealthy friend to write a sympathetic biography of a computer hacker who managed to open prison doors in Australia and America remotely. This mysterious figure is known as the Angel, and Felix's story is meant to turn public opinion in the

hacker's favor and prevent her extradition to the U.S., where she would face the death penalty.

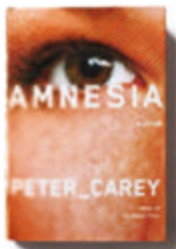
The Angel isn't just any hacker but one Gabrielle Baillieux, the daughter of Felix's onetime love from the radical movement, making the assignment more attractive and more complicated. That link reminds us that Carey, who wrote an entire novel riffing on *Great Expectations*, is unafraid of indulging the Dickensian pleasure of coincidence. And that his hacker is a woman reverses the notion, ingrained by films, TV and Silicon Valley, that coding is the domain of men. We read of Gaby's experiences, dictated onto audiotapes, as Felix attempts to understand them.

Amnesia pits one generation's anti-Establishment thought against a later generation's anti-Establishment action. Felix's journalism career has revolved around long-held suspicions that the CIA helped engineer the constitutional crisis that resulted in the dismissal of Australian Prime Minister Gough Whitlam. A conspiracy theorist at heart, he writes to impose order on that obscure event. Gaby, on the other hand, exists outside the law and perhaps outside history. It's unclear just what her goals are; she recalls hacking into NASA's servers and then finding herself with nothing to say. While Gaby's personal history makes her a rich character, her politics remains opaque: Does anything motivate this hacker, aside from nihilism?

Amnesia's power stems from Felix's confusion. His framework for understanding civil disobedience falls short when it comes to Gaby, and he certainly can't understand her work. The cyberrealm is unknowable: a state without rules, a man-made God. What we've forgotten isn't just the ambiguous history of Australian-U.S. relations that Felix fixates on; it's also the degree to which our lives have become defined by infinite hackable processes. They can be sent into chaos without our ever comprehending them.

Oscar and Lucinda, Carey's most famous novel, depicts early Australia as defined by Britain, at once standing in the mother country's shadow and asserting itself against it. In *Amnesia*, all the world has become Australia, colonized by a dominant but barely reachable state—the web—whose power structure is utterly clouded. Ask Felix, who has spent his life trying to solve a

mystery that's grown less and less relevant in an age when surveillance is blandly accepted: it was easier when there were names and entities upon whom one could hang a good conspiracy. ■

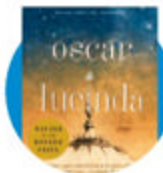


AMNESIA (2015)
In his new novel, Carey explores the world of cyberterrorism



ILLYWHACKER (1985)

Carey's whack at the Great Australian Novel: a tale of a 139-year-old con artist



OSCAR AND LUCINDA (1988)

The lyrical story of two gamblers' star-crossed love and the bet that changes their lives



JACK MAGGS (1997)

A reworking of Dickens' *Great Expectations*, written with a sharp eye for Victorian hypocrisy



TRUE HISTORY OF THE KELLY GANG (2000)

Legendary bandit Ned Kelly tells the story of his life

Television

Most Sketches

Kenan Thompson	883
Fred Armisen	856
Phil Hartman	737
Bill Hader	722
Kevin Nealon	691



Thompson has impersonated celebrities from Bill Cosby to Whoopi Goldberg in his 12 seasons on the air.

Most Sketches Per Episode

Charles Rocket	6.33
Bill Murray	5.42
Chevy Chase	5.34
Denny Dillon	4.85
Will Ferrell	4.85



Call them SNL's Olympians. They showed up onscreen most frequently when they were cast members.

When the 30 Rock star first hosted in 1990, Mike Myers was in the cast and Conan O'Brien was a writer.

Hosted the Most Nights



Alec Baldwin
16



Steve Martin
15



John Goodman
13



Buck Henry
10



Chevy Chase
8

Most Cameos

Jim Henson's Muppets	19
Andy Kaufman	15
Chevy Chase	14
Paul Simon	14
Tina Fey	13



Saturday Night Lights

On Feb. 15, *Saturday Night Live* celebrates its 40th anniversary. TIME crunched the numbers maintained by SNL-superfan sites to see which actors, guests and Muppets came out on top after 789 episodes.

BY DAVE JOHNSON



Most Impersonated Celebrities

Barbara Walters	31
Ted Koppel	26
Al Sharpton	24
Chris Matthews	24
Donald Trump	24

Nothing like anchoring your own television show to get you made fun of by SNL's cast.



6

Number of times Drew Barrymore has hosted SNL. Barrymore, who has hosted the show more than any other woman, was also the youngest host in history. She appeared at the age of 7 in 1982.

Darrell Hammond as Bill Clinton



Most Impersonated Politicians

Bill Clinton	106
George W. Bush	72
Barack Obama	60
Hillary Clinton	49
George H.W. Bush	39

SNL feels Bubba's pain. The former President is the show's favorite political target.

Impersonated by the Greatest Number of Actors

Matthew McConaughey	10
Hillary Clinton	9
Martha Stewart	8
Britney Spears	7
Christina Aguilera	7



Television

Prime Timing. This year's TV landscape belongs to *Empire*, in more ways than one

By Lily Rothman

CONSIDERING THAT THE SCENE WAS FROM A TV show about a backstabbing, drug-funded, singing-and-dancing celebrity family, the plot points for this day's shoot on *Empire* were pretty straightforward. In an upscale Chicago sushi joint commandeered a few weeks ago by the new Fox drama, hard-nosed and fur-flaunting matriarch Cookie, played by Taraji P. Henson, was merely meddling in her son's love life. But even though the scene itself was tame, the actress was nervous.

"Cookie scared the hell out of me," Henson said, recalling her first impressions of a character who, in balancing murderous and maternal urges, is a rare example of a female antihero. "It was like, 'We're going to piss everybody off! The President's going to hate me! The NAACP's going to be done with me!'"

But putting on what she calls her "big-girl underwear" paid off. And speaking to *TIME* more recently, Henson made clear that those initial nerves are now gone. These days, she says, if people want to be offended by *Empire*, let 'em.

She has reason for her newly blithe attitude—and whatever the President or the NAACP may think, the network has reason to love her. When *Empire* debuted in January, the musical melodrama quickly became a breakout hit. Reviews have been decent, especially from critics who embrace the show's camp qualities, with Henson's character often seen as the highlight. But the real enthusiasm comes from the fans. Nielsen's measurement of Twitter chatter shows that *Empire*'s millions of viewers, including famous admirers like Shonda Rhimes, are highly engaged. Its audience is relatively young and diverse. And not only was *Empire*'s premiere the most watched of 2015 for a network drama (tying the premiere of *How to Get Away With Murder* for the season's best ratings among viewers ages 18–49), but viewership actually increased in the following weeks.

"When you come from poverty, you're so afraid of going back to being physically hungry, so you're embarrassed to celebrate, but I'm learning how," says Lee Daniels, a co-creator of the show. "I'm going to try to find a party hat."

Empire's cast and creators have several Oscar nominations between them. The show features

brand-new music from Timbaland. It has instant quotability, in the form of Cookie quips ("Just 'cause I asked Jesus to forgive you don't mean I do!"). But most of all, it has perfect timing.

In the age of *Modern Family*, it's about a clan that's the opposite of wholesome. (It is inspired by *King Lear*, after all.) Henson co-stars with Terrence Howard, who plays Lucious, her ex. They left a life of crime to start a successful company, Empire Entertainment, but Cookie got caught. She gets out of prison just as he's picking which of their sons will run Empire next: the conniving businessman Andre; the soulful songwriter Jamal, whose sexuality is a point of contention; or the brash aspiring rapper Hakeem. Lucious has a deadline—the company is about to go public, and his health is suffering—but they're not making it an easy decision. Oh, and owning a record label means they have to put aside time for musical breaks.

The show revels in soapiness and also in shock factor. It provokes on both sides of the cultural aisle, especially when it comes to incendiary topics like race and sexuality. Political-correctness watchers have plenty to get upset about—the first episode featured an anti-gay slur used triumphantly—and so do the old-fashioned morality boosters of the culture wars, who could in turn bristle at the intimacy of the gay relationship in question. That's why Henson was nervous.

"I love that he makes everybody else uncomfortable," says Howard of his character. "My agent was like, 'Terrence, you could be hated for this stuff.'"

A New Archie Bunker

BUT FOR THE MOST PART, FEW PEOPLE ARE speaking up about being uncomfortable. On Twitter, talk of being offended by what happens on the show is muted. Much more *Empire*-adjacent outrage has been directed at the network's quiet reaction to accusations that Howard has assaulted women in the past, although that attention doesn't seem to have affected ratings.

The ability to stay outré rather than offensive is tied to a hyperawareness of how the edge of the envelope has moved. Take, for example,



NINO MUNOZ—FOX

A promotional photograph of the main cast of the TV show Empire. From left to right: Cookie Lyon (Tasha Taylor), Jamal Lyon (Jussie Smollett), Lucious Lyon (Terrence Howard), Andre Lyon (Colman Domingo), and Hakeem Lyon (Younis Roberson). They are all dressed in formal or semi-formal attire, standing in a grand, dimly lit room with ornate architectural details.

**FACE THE MUSIC
WITH THE
LYON FAMILY**

JAMAL

The gifted and gay middle child, he's his dad's disappointment—and his mom's hope

Empire's clan of hitmakers keep the drama close to home

ANDRE

The eldest son, who's got business on the brain—smart but not always stable

LUCIOUS

He's a modern King Lear with limited time to choose a successor from among his warring sons

COOKIE

Willing to do time to protect her family, she's fierce, and she wants what's hers

HAKEEM

The youngest son, he wants to follow in his father's footsteps but may not have what it takes



Lucious' estrangement from Jamal, whose sexuality he sees as a barrier to success. Their story draws on details of Daniels' life as a gay man, and he wants it to make viewers think twice about their prejudices and those within the hip-hop community. Howard likens it to an Archie Bunker scenario: the bigoted character is the hero, but that serves to hold up a mirror for the audience.

Ilene Chaiken, who created the groundbreaking lesbian-centric series *The L Word* a decade ago, says that when she saw how straight men responded to a test screening of *Empire*, she knew times had changed. "The same kind of demographic representation a few years before would have rejected that character and that story entirely," she says, referring to Jamal. "Instead, I saw them embrace it. I felt in some cases the wince, and then the real embrace of character and humanity."

The show's relationship with race is trickier. *Empire's* largely black cast has been held up as an illustration of this year's overall trend toward diversity on television. That's a social good that has recently begun to benefit networks' bottom lines, says Herman S. Gray, author of *Watching Race: Television and the Struggle for Blackness*. Networks used to want to push the fewest audience members away, which meant that majority populations and points of view ruled. If you didn't like it, you were out of luck. These days,

That's a rap Daniels, far left, works with Henson, right, and Jussie Smollett, who plays her musically gifted son Jamal

viewers who are interested in minority perspectives and communities can turn to cable and web video, increasing pressure on broadcast networks to diversify.

But while LGBT advocates have celebrated *Empire*, despite its use of the other *F* word, the show's racial dynamics have angered some viewers, who accuse it of retrograde representation of blacks. What's the good of creating a place for African-American actors—one of Daniels' career goals—if you're just going to ask them to play rappers and gangsters? In the *Chicago Sun-Times*, Mary Mitchell wrote that watching *Empire* was like watching "another reality TV show depicting black people behaving shamefully."

Politics of Respectability

LEE DANIELS WAS PREPARED FOR WORSE. His films, from *Precious* to *The Paperboy*, have been magnets for debate, not least for this reason. He received death threats after he made the movie *Monster's Ball*, in which Halle Berry's character falls for a racist. Friends pleaded with him not to cast Samuel L. Jackson as a pedophile in *The Woodsman*, on which Daniels worked as a producer. (Kevin Bacon ended up

starring.) His own mother asks why he doesn't make movies like Tyler Perry's, in which people are at least happy. "I want to celebrate my people, but I also want to tell the truth," he explains. "Good stories are about complex people and heroes that are flawed."

Talk of the push and pull Daniels describes—truth vs. celebration, the matter of "respectability politics"—has been part of minority storytelling for as long as TV has existed, and it has a long history of raising hackles in a wide range of communities. *The Sopranos* and *Jersey Shore* were both protested by Italian-American groups, demonstrating that any show of any quality takes a risk if it plays with stereotypes.

But in the way *Empire* does just that, the show is very much a product of its time. That's because, as Gray points out, Daniels' creation isn't alone. In January, an Associated Press study found that three of the broadcast networks, including Fox, employ prime-time casts that are at least as black as the general population. That's thanks to *Empire* and also shows like *Black-ish*, the middle-class family comedy that ABC airs opposite it. And when television offers a wider range of stories about people from different backgrounds, the burden of presenting role models is lightened. Seen that way, the characters who might seem the most ofensive are also signs of progress. (This doesn't apply just to African-American stories. My colleague James Poniewozik has lauded the new sitcom *Fresh Off the Boat* for playing with identity politics in the Asian-American community.)

"I don't want to separate them from the production context, but I also don't want to separate them from the political moment," Gray says, "the political moment being, Can African Americans—or can the expectations put on African-American creators—ever get past the politics of respectability?"

Daniels hopes the answer to that question is yes. And if not now, soon: *Empire* was picked up for a second season after only two episodes had aired. "You feel like your truth is not everybody else's truth, so mainstream America would never respond," he says. "But you cross your fingers." —WITH REPORTING BY NOLAN FEENEY

Kristin van Ogtrop

My Kind of Wearable Tech

Advice for Silicon Valley on creating devices that are not too embarrassing to put on in public



NOTE TO THE MILLIONS OF you who did not attend this year's Consumer Electronics Show in Las Vegas in January: you missed out on learning how to Thync. Lest you think I'm being coy, let me add that I don't know how to Thync either. And I'm not sure I want to. But more on that in a minute.

Thync is an app-controlled, wearable device that—like Google Glass before it—promises to dramatically and forever improve life for all of humanity. It also (naturally) won an award for “Best in Cool Tech” at the show. Using tDCS (that's transcranial direct-current stimulation to you and me), Thync promises to make you feel calm without pills or alcohol. Never mind that Thync is not yet approved by the FDA, which I hear is sort of a big deal. And never mind that you might feel less calm if anyone you know catches you hooked up to Thync—at least if you have a shred of self-respect. Because to use the device you need to attach two electrodes to your head, and one of them is on your temple.

Therein lies the problem of wearable tech. With the exception of the Jawbone, which not only tracks your activity but also comes in attractive colors and evokes a Cartier panther bracelet in the way it wraps elegantly around your wrist, all these devices have a very high barrier to entry in the looks department. Call me crazy, but in my experience, people generally don't want to look idiotic. If I ran the FDA (Hello, Congress? This is on my bucket list, and apparently there's an opening), I would require that the fashion standards of all wearable tech match the ingenuity of its functionality. Because right now, most wearable tech looks like it was designed by 13-year-old boys who sprinted straight home from school every day to watch *The Matrix*.

When Google Glass went off the rails (see: early adopters = “glassholes”), there was a lot of speculation as to why. Maybe it was because someone had an affair with a co-worker or someone spent

too much on skydivers to announce the launch. But did anyone consider that Google Glass just looked sort of ... stupid? I don't care if it can direct me to the nearest Dunkin' Donuts or record my dog chasing his tail—I'm not going to wear a pair of glasses that make me look like Hugo Weaving's creepy Agent Smith. Unless, of course, it will get me that job running the FDA.

So Thync—which, to be clear, I have yet to approve—definitely needs to watch and learn and work out the electrode-on-forehead piece. Otherwise it's a nonstarter for your average person with the average fear of public humiliation. And there are still strides to be made in the everyday-usefulness department. Do I need an electrode that's going to make me calm, or glasses that will direct me to Dunkin' Donuts? No. But I do need the following:

1. The Watch-Out-Here-Comes-the Hormonal-Teen!

LOOKS LIKE: An Alexis Bittar bracelet. Light but substantial. Lucite; nearly indestructible.



USE: Reroutes your path away from possibly insane children who are angry about something you can't see, feel, understand, detect or predict in any way. Pulses an all-clear signal when danger has passed.

2. The Soulmate Sensor

LOOKS LIKE: A Lulu Frost earring. Sparkly and inviting. Says, “I am unique but not crazy/weird.”

USE: For when you meet someone at a party or on vacation whom you may never talk to again because you don't realize that this person is the friend you've been waiting for. Links immediately to Facebook; the two of you remain connected forever.

3. The Humor Injector

This one is my husband's idea. It is something you use on a wife who is having a temper tantrum because her iPhone—supposedly the most user-friendly, intuitive thing ever invented—keeps photos stored even after she thinks they are deleted, so when she tries to take a picture, that annoying “cannot take photo” thing pops up, which makes her want to kill someone, even the husband who is trying to help. I actually don't understand this piece of tech wear since it was his idea, and that's really all there is to say on the matter.

4. The Last-Timer

LOOKS LIKE: Stella McCartney sunglasses; dark lenses are a must here, as the product may induce tears.

USE: Anticipates—and records video of—the last time your child calls you “Mommy” before he makes the depressing leap to “Mom.” And the last time your cat jumps up on the bed to cuddle against your knees before she is too old to make the leap. You get the picture (and the glasses will too).

So to Thync and Google and the unbelievably brilliant fashion people they'll need to make any of the wearables wearable: I'm waiting. ■

Pop Chart

LOVE IT

▲ **Tom Hanks reunited with a volleyball** that looked just like *Cast Away*'s Wilson at a New York Rangers game.



▲ Oreo—which recently unveiled Red Velvet cookies—is reportedly **testing a s'mores flavor**.

▲ **Madonna premiered her latest music video**, "Living for Love," on Snapchat. She's the first major artist to do so.

▲ **Actress Kristen Wiig wore an actual wig** and danced during Sia's performance of "Chandelier" at the Grammys.



THE DIGITS

\$30,000



Price of a special Valentine's Day margarita from Iron Cactus Mexican Grill in Austin. The drink includes Patrón Platinum Tequila, fresh-squeezed lime juice—and a pair of diamond earrings designed by Zoltan David



HORSE PLAY When movie producers needed animals in the 1950s, they sometimes went to Willis Parker's ranch for miniature horses like Chauncey, seen here with 3-year-old Cynthia West in a photo from a 1952 *LIFE* cover shoot. To see the full gallery, visit time.com/minihorses.

VERBATIM

'I'm alive and kicking and happy as hell.'

HARPER LEE, author, via a statement from her attorney, amid speculation about her willingness to release *Go Set a Watchman*, the long-delayed sequel to her novel *To Kill a Mockingbird*

QUICK TALK

Christina Aguilera

The 34-year-old singer and recent Grammy winner is back as a coach on NBC's *The Voice*, which returns Feb. 23. —NOLAN FEENEY

You're returning to *The Voice* after two seasons away. Did you miss spinning around in the chairs? Yeah, the chairs can be kind of fun! Too bad it only lasts for the first section, the blind auditions. **What a bummer.** But truly, the company I come back to is so fun. I would be crazy bored behind the scenes if I wasn't coming back to Blake [Shelton] and Adam [Levine]'s craziness. **Your son Max just turned 7. How long before he finds an old Christina Aguilera video on YouTube and asks, "Mom, can we talk about what happened in 2002?"**

Luckily he hasn't discovered that yet. But it's scary what's out there for him to find: certain movies, certain song lyrics that I'm even hearing him come home with. **Like what?** It could be anything as innocent as Beyoncé to songs about baking soda, you know what I mean? But yeah, I'm prepared to tell him about who I am as an artist and why he's able to live the life that he now lives. It's a lot better than how I was brought up! **Your 2001 version of "Lady Marmalade" with Pink, Mya and Lil' Kim was a big moment for women in pop. If you had to pick artists for a 2015 version, who would they be?** Miley [Cyrus] would be great in that mix, because she's a great risk taker and has a lot of fun. Maybe Nicki Minaj. It's always great to see girls come together, especially in the face of the media trying to pit us against each other. It's never-ending, no matter how young or old you are.





DIVE IN Audience participation isn't just encouraged at Jen Lewin's *The Pool*—it's required. Over 100 LED-lit platforms change color based on the pressure and speed of visitors' physical interactions. The exhibit, seen here at the Centro Colombo mall in Lisbon (it's headed to the Montréal en Lumière festival, which runs Feb. 19 to March 1), is surrounded by wonderWall, a hanging barrier designed by LIKEarchitects that comprises 20,000 strips of black and white fabric.

ROUNDUP

Love at First Swipe

A new dating app called High There! hopes to unite potential mates on the basis of a shared affinity for all things marijuana, at least in the states where the drug is legal.

But it's hardly the first would-be Tinder successor to forge connections based on a specific interest. Here, a look at four others:

1

FOR INSTAGRAM FIENDS

Glimpse (available for iOS) allows users to curate 'grams that showcase their best qualities and then find some-one aesthetically compatible.

2

FOR TRAVELERS

Wingman (launching soon for iOS and Android) lets users send messages in airports and on wi-fi-enabled flights in an effort to connect with like-minded jet-setters.



3

FOR ELITISTS

The League (still in beta for iOS and Android) is an invite-only matchmaking service for ambitious young professionals looking to become one half of the Next Great Power Couple.

4

FOR SALAD LOVERS

SaladMatch, created by fast-casual chain Just Salad and available for iOS, matches users by salad preferences and what time they typically eat lunch.



Scientists at New York University have determined that it takes approximately 2,500 licks to get to the center of a Tootsie Roll Pop.

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LEAVE IT

▼ Damon Wayans Jr., a.k.a. Coach, **will be leaving Fox's *New Girl*** (again) after its fourth season.

▼ *Saturday Night Live* creator Lorne Michaels admitted he **passed on casting Steve Carell**, Stephen Colbert, Lisa Kudrow and others.

▼ A woman was kicked out of a Wisconsin McDonald's for **bringing in a diaper-wearing kangaroo** that she claimed was a service animal.

10 Questions

Ai-jen Poo's 87-year-old grandmother and her caregiver Mrs. Sun helped inspire the book



Assisting the elderly is a crusade for **Ai-jen Poo**, who wants Americans (and their caregivers) to live with dignity

You're well known for organizing domestic workers. How did you come to write *The Age of Dignity*, about the elderly?

Seven years ago, workers started coming to the National Domestic Workers Alliance [which she leads] saying they'd like training in elder care. Even though they were hired as housekeepers or nannies, they were called upon to take care of the aging relatives of their employers. It was an indication of this huge need that American families are experiencing for elder care. We realized there was a tremendous demographic shift.

Is this really what a 2014 MacArthur "genius" grant winner should spend brainpower on?

It absolutely is. By the year 2050, 27 million Americans will need some form of long-term care or assistance, just to meet their basic daily needs. If you're very, very wealthy you can afford long-term-care insurance. If you're very poor, you'll be eligible for Medicaid. There's nothing in between. So we're headed toward, I do believe, a potential disaster.

What's wrong with looking after the aged in nursing homes?

There are great nursing homes. The Green House Project is a different kind of model. But those are, I think, more the exception than the rule.

Elder care is also often done for low wages by new or undocumented immigrants.

Will that change?

Manufacturing in the '20s and '30s was sweatshop work, largely done by new immigrants. We turned factory work into good jobs with pathways to opportunities. That professionalization was the basis for 20th century prosperity. That's what the care workforce needs to be. These have the potential to be really good jobs.

You compare investing in home-care workers to investing in railways or the Internet. But aren't those about growth, not dying?

For working-age adults right now, especially with what they call the sandwich generation—people who are caring for children and aging parents—this is having an impact on their productivity. People are having to leave the workforce. In fact, many people are calling it the panini generation, there's so much squeezing. That's why we call caregiving the work that makes all other work possible. It's the invisible infrastructure of the economy.

Why did you talk about your fertility struggle in the book?

Millions of women go through this, and I feel like [there are parallels]: too many of us have been grappling

with these challenges alone, in isolation, behind closed doors for too long.

Most caregivers are women. And their employers are women. Why do we hear about women treating their nannies and cleaning ladies badly?

I think most of us think of ourselves as employees. And nobody has ever explained to us what it means to employ someone, let alone in our own household, where it's incredibly intimate and emotional.

What are the most common mistakes people make?

We're asking employers to take the Fair Care Pledge. It's three things: to commit to fair pay, paid time off, and an explicit agreement around the job expectations.

Four states have enacted domestic-worker bills. Who's next?

Right now we're working effectively in Connecticut and Illinois. And then for 2016, Colorado, Washington and New Jersey.

How tough was the name Ai-jen Poo to grow up with?
It was incredibly difficult. My house was a location of probably more prank calls than anybody else in the neighborhood. It gave me a tough skin.

—BELINDA LUSCOMBE



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